

The development of the temporal macrostructure of life narratives across adolescence:
Beginnings, linear narrative form, and endings

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Abstract

The ontogeny of the ability to describe people culminates in adolescence in the development of the life story. An overarching temporal macrostructure and framing by a prehistory and a future-oriented global evaluation of life helps integrate disparate autobiographical memories into a coherent story. Two life narratives each of 8-, 12-, 16-, and 20 year-olds (N = 102) were analyzed in terms of how well-formed their beginnings and endings are and how much they follow a linear temporal order. By age 12, the majority of life narratives began with birth, ended in the present, and followed a chronological order. In late adolescence and early adulthood more elaborate birth narratives and retrospective evaluations of life and outlooks into the future were added. These formal characteristics were related to biographical practices, biographical knowledge, and fluid intelligence. Text-analytical methods are proposed as a method for the analysis of biographical and autobiographical reasoning and understanding.

The development of the temporal macrostructure of life narratives across adolescence: Beginnings, linear narrative form, and endings

The life story is the prototype for a biographical approach to personality. It is often equated with an ideographic approach. As much as life stories focus on individuals to describe and explain his or her life, they also share some more abstract features. We propose to consider the narrative, textual quality as an essential formal characteristic of life stories and to use it to measure the development of the ability to narrate one's life across adolescence (Habermas & Bluck, 2000; McAdams, 1985). Whereas the semantic macrostructure of texts is understood to be its gist (Louwerse & Graesser, 2006), we introduce the term *temporal macrostructure* of a narrative text to denote its overall temporal order and the elaboration of its beginnings and endings. Beginnings and endings anchor life narratives in the past and in the present. Moreover, we propose that a mature temporal macrostructure of life narratives involves an initial foreshadowing of later events and a concluding outlook based on a retrospective evaluation of life. This study tests the hypothesis that a mature temporal macrostructure of life narratives is acquired first during adolescence. Thus this study is not primarily concerned with individual differences, but with a formal aspect of the development of how individuals conceive of others' and their own personality. Charting the normative development of the life story is, however, also important for research in individual differences in personality as expressed in life narratives, offering both a lower age limit for the analysis of life narratives as well as a normative frame of reference for defining individual variations in life story accounts. We will first define textual aspects of the life story, delineate what is known about its development, and define three aspects of the temporal macrostructure of life narratives, beginnings, endings, and the middle parts, and will then present a developmental study of these three aspects.

The Life Story

In the past 15 years, the life story has increasingly attracted the attention of personality researchers. McAdams (1995) proposed a three-layered architecture of personality, with traits at its basis, a middle level of personal projects and values, and a top-level constituted by the life story (McAdams & Pals, 2006). Instigated by this model, systematic analyses of themes in autobiographical narratives have opened the life story to quantitative analyses. Thus working in the personological tradition, central motives such as agency and communion have been identified in autobiographical narratives (Woike & Polo, 2001) and have been related to traits (McAdams et al., 2004; Woike & Polo, 2001). McAdams found more redemptive sequences of negative experiences turning out well than contamination sequences of good turning into bad in the life stories of highly generative adults ((McAdams, Reynolds, Lewis, Patten, & Bowman, 2001). Walker and Frimer (2007) identified stronger themes of agency and communion, more redemptive sequences, and more mentioning of helpful figures in early life.

In a more formal verse, coherence of autobiographical narratives is related to well-being (Baerger & McAdams, 1999) as well as to the trait of openness to experience and to ego-development (J. M. Adler, Wagner, & McAdams, 2007). Thorne and McLean (2004), Pasupathi (Pasupathi, Weeks, & Rice, 2006) and Pals (2006) have analyzed various aspects of autobiographical reasoning or meaning making in narratives of personal experiences. While the former approaches show how life narratives reflect personality, Thorne (2000) and McLean, Pasupathi, and Pals (2007) argue that the telling of personal experiences also shapes personality by contributing to the continual reconstruction of the life story.

The life story is, as we intend to show, acquired during the first two decades of life, based on the person concept and narrative skills. The concept of a person typically develops from

describing physical appearance, preferences, abilities, and personality traits in early adolescence (Damon & Hart, 1986; Selman, 1980). The ability to remember past experiences emerges with basic acts of recognition and imitation (Bauer, 2006) and is socialized through memory talk with adults (Haden, Haine, & Fivush, 1997) in which preschool children learn how to narrate past experiences they do not share with the listener (Nelson & Fivush, 2004). The ability to narrate both fictitious stories and personal experiences has developed by age 5 or six and improves through the end of grade school (Peterson & McCabe, 1983). The development of the person concept and the development of narrative skills merge in adolescence when the life story is constructed. The life story adds a diachronic or biographical dimension to the person concept and integrates memories of specific events and biographical facts with the development of the person within the framework of a life (Habermas & Bluck, 2000).

The life story is a quintessential element in the adolescent development of identity (Erikson, 1968). It is in a very flexible linguistic-cognitive format that allows for the creation of self-continuity and defines individuality across multiple and highly individual identity-transformations (Singer, 2004). In modern societies, individuals are expected to be able to give reasonable, that is plausible and morally acceptable, accounts of how they have lived their lives and how they have struggled to develop into a responsible adult.

An essential feature of the life story is that life, or the individual's development, is taken as the frame of reference for recounting, remembering, or thinking about past events and the self. Habermas and Bluck (2000) defined four aspects of global coherence of life stories: temporal, coherence with a cultural concept of biography, causal, and thematic coherence. Temporal coherence provides the location of an event within the context of an individual's life. Coherence with a cultural concept of biography locates an individual's past events in a conventional set of normative life events which are defined by age norms. In addition, some non-normative, yet biographically salient, life events are retained and are included in a conventional skeleton of events to be expected in a standard life within a given culture. This set of biographically salient events has been termed *life script* (Berntsen & Rubin, 2004; Rubin & Berntsen, 2003). Causal coherence relates events and the individual's development by providing long-term, biographical causes and consequences as well as reasons and aims for the individual's reactions, actions, and decisions. Causal-motivational links help bridge changes in the individual's life and personality, thereby creating personal continuity in the midst of change. Thematic coherence, in contrast, is created by highlighting what remains unchanged in a life, thereby differentiating an individual from other people.

The life story may manifest itself either in entire, globally coherent life narratives or in more partial *autobiographical reasoning*. Autobiographical reasoning links events in a life with each other and with the individual's development (Habermas & Bluck, 2000). Bluck and Habermas (2000) suggest that repeated acts of autobiographical reasoning ontogenetically lead to the construction of a skeletal cognitive *life story schema* which, once constructed, in turn is used for autobiographical reasoning and constructing life narratives. The life story schema constitutes the top level of the autobiographical knowledge base (Conway & Pleydell-Pearce, 2000; Conway, Singer, & Tagini, 2004).

The Development of the Life Story in Adolescence

McAdams (1985) and Habermas and Bluck (2000) argue that the life story first develops in adolescence. To date, only few studies have tested this assertion. In an interview study of autobiographical reasoning, a sample of 48 8-, 12-, 16-, and 20 year-olds was tested for the ability to create temporal, causal, and thematic biographical links between an important past life

event and other, distant parts of life and their self. The spontaneous use of and the ability for autobiographical reasoning to create causal and thematic links increased dramatically across the entire age range, while the increase in the ability to date the event was small (Habermas, Fröhlich, & Diel, 2007).

The spontaneous use of autobiographical reasoning appears to increase beyond adolescence. In a life span study of narratives of wisdom related events, the spontaneous creation of causal links to other life events increased across adulthood and drawing a lesson from this experience increased between adolescence and middle adulthood (Bluck & Glück, 2004). Another element of autobiographical reasoning, creating causal links between biographical events and the self and personal development, increased in crisis narratives across adulthood (Pasupathi & Mansour, 2006).

Similar to autobiographical reasoning, the ability to relate globally coherent life narratives develops across adolescence. In a small study of oral life narratives of 12 adolescents aged 12, 15 and 18 years, a variety of local linguistic indicators of global temporal, causal, and thematic coherence increased across the adolescent age range (Habermas & Paha, 2001). In a larger study of oral life narratives of 102 8-, 12-, 16- and 20 year-olds, most local indicators again showed an increase across the entire age range, with the most drastic increases occurring between late childhood and early adolescence (Habermas & de Silveira, in press)

The development of coherence of life narratives with the cultural concept of biography was measured in two studies. In the same sample of 48 8-, 12-, 16- and 20 year-olds mentioned previously, knowledge of age norms for life events and knowledge of normative biographical salience of life events increased between ages 8 and 16 (Habermas, 2007). With age, the selection of the seven most important memories, which participants had to include in the life narratives, comprised more normative versus non-normative events as well as more conventional life events. In another study, 120 9-, 11-, and 14-year-olds wrote life narratives in the classroom and nominated the ten most important events in a normal life (life script). With age, the childrens' life script increasingly resembled, and their life narratives increasingly contained events from, the adult life script that served as the norm (Bohn & Berntsen, 2007). These two studies strongly indicate that between childhood and mid-adolescence cultural knowledge about normative aspects of life is acquired and that this knowledge is increasingly used to structure life narratives.

The reported measures of global coherence in life narrative are either local or indirect. Therefore one could argue that better measures of the global nature of life narratives are warranted, because global coherence is a quality of the whole text. The easiest way to quantify complex aspects of objects is to use rating scales. A variety of rating scales for coherence has been used in the past (Fiese et al., 1999; Main, Kaplan, & Cassidy, 1985). Also in the life narrative study by Habermas and de Silveira (in press), rating scales were used to judge three aspects of global coherence. These were how much the narrative provides temporal orientation so that the listener is able to locate events in the narrated life, the degree to which events are integrated with other events and the self by explicating their developmental consequences, and the degree to which transitions from one event to another event are plausible. All three global aspects of life narratives increased with age.

The Overall Structure of Life Narratives

A relative disadvantage of rating scales is the difficulty to define what is actually being rated. A possible approach to determine global coherence that also respects the global nature of the phenomenon and, in addition, identifies real properties of the narrative, is to define, code, and

count elements of the overall structure of life narratives. Single narratives do have a normative structure described by various story grammars. Labov and Waletzky (1967), for example, described oral everyday narratives of personal experiences to have the following segments: abstract, orientation to the background, complication which provides the out-of-the-ordinary event worth being narrated, attempts to solve the complication, result, and coda that connects the past happenings with the present. Coherence of single narratives can therefore be defined in terms of the completeness of these structural elements (e.g., Baerger & McAdams, 1999). In comparison to narratives of single events, entire life narratives seem to be less of a natural kind and therefore less normatively structured. Still we would like to argue that there are some culturally defined normative expectations as to what constitutes an appropriate life narrative and what does not, naming the entire set of these expectations *cultural concept of biography* (Habermas, 2007).

Probably the central cultural prototype for oral life narratives is the genre of literary biography and autobiography. Historical accounts agree that since the late 18th century, beginning with Rousseau, the prototypical autobiography is an account of the development of one's personality, a kind of self-reflective *Bildungsroman* (Holdenried, 2000). Although the literary form of autobiography has continued to evolve, increasingly stressing the literary, fictional character of the genre and creating non-linear forms of the genre, we believe that the linear, developmental account of one's life remains at the core of the popular conception life story. In order to define the normative cultural form of life narratives which competent members of a culture use, we also rely on observations of the global structure of literary autobiography. Following Aristotle's approach to coherence of drama in his *Poetics*, we discuss normative aspects of the beginnings, middle parts, and endings of life narratives, starting with the middle parts. We maintain that foreshadowing life themes at the beginning, a linear temporal order and global statements at both the beginning and ending, and re-evaluating life and providing perspective at the ending are all elements of the cultural concept of biography regarding the temporal macrostructure of life narratives.

The Linear Order of Narrative and Autobiography

Narrative is defined by the recreation of the temporal succession of events in the narrative sequence in which these events are recounted (Labov & Waletzky, 1967; Ricoeur, 1985). In their basic form, narratives of lives therefore follow the sequence of events as they happened in life. Accordingly, autobiographies generally follow a linear temporal order (Shumaker, 1954). This linear temporal pattern in constructing one's life is typical for modern Western societies, but not necessarily universal (TenHouton, 1999). In oral narratives, deviations from a linear temporal order may be due to narrative incompetence, to emotional turmoil, to uncertainty, but also to a predominantly aesthetic mode of narrating (Ochs & Capps, 2001). In artistic narrative, temporary deviations from a linear order, *anachronies*, are frequently used. A primary story line is interspersed with flashforwards and flashbacks, *prolepses* and *analepses* (Genette, 1982).

It is also possible that a narrative does not return to the point from which the temporal leap began, creating a more nonlinear overall temporal structure. In extreme cases, such as the movie *Memento* by Christopher Nolan (2000), the order may even be systematically reversed. In other cases, parallel developments may be recounted one after another. For example, it has been suggested that psychopathological states such as depression alter the experience of time and therefore lead to a nonlinear temporal order (Luborsky, 1993). To differentiate the two kinds of anachronies, we term anachronies which return to the point of departure *insertions* and those which do not *temporal leaps*.

A third kind of anachronies are temporal leaps which are not marked as such and therefore create temporal disorientation. *Unmarked anachronies* may result from cognitive immaturity (Ochs & Capps, 2001) or from psychopathological states such as borderline pathology (Kernberg, 1984) or psychosis (Ribeiro, 1994).

Mature oral life narratives may be expected to be free of unmarked anachronies, but to contain a certain amount of insertions. For example, insertions may serve to introduce background information (Genette, 1982) or to recount an episode which exemplifies a general statement (Schütze, 1984). Based on the assumption of a basic linear order as normative in Western cultures, we expect that temporal leaps are rare in mature life narratives.

Beginnings of Life Narratives

Oral narratives usually open with an abstract, which announces what is to come, often providing a summary of the main complicating event or a global evaluation. It is followed by an orientation that sets the stage for the main events to follow (Labov & Waletzky, 1967). Most autobiographies begin at the beginning of life, that is with the social and family history as the setting for one's life, with birth, or with childhood memories (Shumaker, 1954). The inclusion of childhood memories in autobiographies is a landmark of developmental autobiographies. Historically these started with Rousseau's *Confessions* (Lejeune, 1989), paralleling the beginnings of modern psychology with Karl Philipp Moritz' *Journal for Empirical Psychology*, in which he strongly advocated the use of childhood memories for reconstructing formative influences on individuals' personality (Schlumbohm, 1998).

Childhood is usually remembered less well than later life phases, and events from the first two to three years are usually forgotten by adults. Therefore earliest memories are probably often more subject to the influence of shared retellings and reconstruction. Lejeune (1989) observed that childhood memories are especially suited to introduce central topics of the life to come. Autobiographies use childhood to create a kind of a myth of origin (Coe, 1984; McCooney, 1995). More specifically, childhood memories may help create coherence either by defining a problem or task which the individual lives to solve (Pals, 2006), or by containing a condensed version of what is typical for this individual (A. Adler, 1929; Carlson, 1981). Pillemer (1998) termed formative events 'originating events' and typical events 'anchoring events'.

Some autobiographies go back to before the times the narrator remembers. Commencing an autobiography with birth means obeying the definition of the genre, which is a story of a whole life, not only of memories. Beginning a life narrative with birth implies adopting an institutional view on one's identity because birthday, together with name and birthplace are the essential biographical data used to identify citizens. In autobiographies, extended birth narratives serve the same narrative function as early childhood memories (Lejeune, 1996). The technique of foreshadowing by condensing central topics and life tasks in a birth narrative has been used in biographical fiction. Sterne's (1760) *Tristram Shandy*, for example, begins with the protagonist's conception and uses two birth incidents, the breaking of his nose and the selection of his first name by accident, to foreshadow much of his future fate.

Other life narratives and autobiographies even go back to before the beginning of life to describe the setting into which the individual was born, defining a historical moment, social class, family position, family traditions, and family expectations. This self-contextualization requires integrating abstract historical knowledge and knowledge of family stories into one's autobiography.

A peculiarity of these possible beginnings of life narratives is that the narrator cannot claim the authenticity of a first person account, because she or he has to rely on hearsay. Therefore

narratives of earliest memories often include comments about the frailty of one's memory (McCabe, Capron, & Peterson, 1991). Birth narratives are accompanied by comments on the source of the narrative and may be narrated from a third person perspective (Nilsson, 2002). The early part of life narratives indeed consists of *nonparticipant narratives* (Linde, 2001), that is of shared family narratives which have been taken on from parents (Fiese & Bickham, 2004) and grandparents (Norris, Kuiack, & Pratt, 2004) to form part of one's identity. Thus we expect mature beginnings of life narratives help create coherence both by beginning before memory sets in and by comprising scenes that foreshadow themes to come later in life and in the narrative.

Endings of Life Narratives

Oral narratives of personal experiences normatively end with a resolution and with the explicit evaluation of the outcome as success or failure. The end of the narrative is then signalled by a coda returning the listener to the present (Labov & Waletzky, 1967). But how are life narratives supposed to be ended? If life narratives have a normative linear temporal order, and if the extension of life narratives is defined by an individual life, this seems to imply that they should end at the end of life. This is, however, possible only in biographies, but not in autobiographies, which can only end at the present, with the narrator and protagonist still alive.

However, simply ending the narrative at present would leave a life narrative unfinished. How can a life narrative be wrapped up and framed at the end? Single narratives often begin and end with global evaluations of the whole story from a present point of view. In oral life narratives, *global biographical evaluations* (Bohn & Berntsen, 2007; Rosenthal, 1995) serve to create a unitary perspective of this life. We have observed that adults often place these global evaluations at the end of life narratives, which means that the narrator steps back from this life and shares a distanced perspective of it with the listener.

Autobiographies written towards the end of life are said to end in a state of stability (Shumaker, 1954). Life narratives of children, adolescents and young adults, in contrast, end at a time of their lives in which the larger part of life still lies ahead of them. Therefore, and because autobiographical remembering often serves a directive function by having learnt from past mistakes (Bluck, Alea, Habermas, & Rubin, 2005), young peoples' life narratives may transcend the present by giving an outlook onto the part of life which still lies in the future by talking about expectations and plans. The narrator may even base the outlook on the global evaluation of the life as lived up to the present, using insights about the past to formulate intentions of how to plan life and how to ameliorate his or her personal development. Across the adolescent age range, a future outlook may become increasingly prominent also due to the gradual extension of future time perspective (Greene, 1986).

The Present Study

There is agreement that canonical beginnings and endings of single narratives are acquired by age 9 or 10 (Peterson & McCabe, 1983). Little, in contrast, is known about the development of the temporal macrostructure of life narratives. One attempt to measure the development of the global organization of life narratives was undertaken by Bohn and Berntsen (2007), who coded relatively short written life narratives from children aged 9 to 15 years for complexity. The least complex narratives contained only a single episode, the most complex level was defined by chronological, evaluative narratives. Complexity increased with age. The most frequently produced life narratives were loosely coordinated multi-episode narratives at ages 9 and 11 and well integrated narratives without evaluation at age 14. The ability to create global coherence in life narratives by creating a complex global organization proved to be relatively independent from the ability to narrate a single event. Instead it was related to the knowledge of an adult life

script. Thus the ability to construe life narratives is relatively independent from the more basic skill of narrating single stories, but related to more specifically biographical knowledge.

As to beginnings and endings of life narratives, Habermas (2006) developed a coding scheme on the basis of 40 life narratives of 8-, 12-, 16- and 20-year-olds. Beginnings were categorized for the time in life when narratives began plus whether any details were provided concerning one's birth, such as name, date, or place of birth. The categories were (starting with those most typical for the youngest and ending with those used most frequently by the oldest): beginning before birth, at birth, at birth plus details of place and time, beginning in first three years of life, beginning after age 2. Endings were categorized, again in developmental order: ends before present, ends in present, ends with outlook into future, ends with evaluation of life. Applying this schema to their sample of 120 written life narratives, Bohn and Berntsen (2007) found that only from age 11 onward did the majority of life narratives open with birth, and only at age 14 did the majority of life narratives close by at least either a brief outlook or an evaluative statement.

In this study we tested the hypotheses that the temporal macrostructure of life narratives develops first in adolescence, defined in terms of the timing and elaboration of beginnings and endings and of the temporal linearity of the narrative. We expected that unmarked anachronies would decrease with age, while insertions, which render the narrative more complex, would not. To be able to argue that we measured ability, and not chance performance, we elicited life narratives twice, two weeks apart, and asked half of each age group to perform three tasks related to biography in between, while the other half performed similar tasks not related to biography. We expected that both repetition and performing biographical tasks would enhance the performance after two weeks. We explored the expected positive relation of the temporal macrostructure to ratings of temporal orientation and to the frequency of local temporal indicators, and, going beyond life narratives, to biographical knowledge and practices. In contrast, we expected the temporal macrostructure to correlate neither with other aspects of life narrative coherence nor with general intelligence.

Method

Participants

A total of 102 participants was divided between four groups with 25 eight-year-olds ($M = 8.70$, $SD = .24$), 27 twelve-year-olds ($M = 12.50$, $SD = .37$), 25 sixteen-year-olds ($M = 16.62$, $SD = .45$), and 25 twenty-year-olds ($M = 20.57$, $SD = .49$), about equally divided among the sexes, with 12, 14, 12, and 13 girls and young women in the four age groups respectively. Six other participants from all four age groups had been excluded due to technical problems or unwillingness to narrate. Additionally, eight participants, one for each gender and age group, were asked for their life narrative once, to explore the effects of a variation in instructions.

The youngest were sampled from the top of the three classes of an elementary school in Frankfurt am Main, Germany, as indicated by the teachers since in Germany children are sent to different levels of school at age 10, *Gymnasium* being the top level. The 12- and 16-year-olds were sampled from three classes of an average Frankfurt secondary school, *Gymnasium*, comparable in the mixed social composition of its students to the elementary school. The oldest age group was sampled from former students of the same *Gymnasium*. About 38% of participants had at least one parent with a migrant background, ranging from East Asia to the Americas, Southern and Eastern Europe and the Near East. All participants spoke German fluently. Each participant received € 20.

Procedure

The 102 participants were tested twice, two weeks apart, by two different (out of three)

female interviewers, who were distributed equally across conditions. In the first session they recounted a life narrative. About half of each age group (13, 14, 13, and 12 in ascending age groups), divided about equally between the sexes, was trained by performing biography-related tasks following the first life narrative to enhance their ability to create a coherent life narrative. One such task was the Autobiographical Reasoning Interview, in which one significant event not told in the life narrative was asked to be related temporally, causally, and thematically to other parts of life by posing specific questions. This interview will be treated merely as a training device, its results are reported separately (Habermas et al., 2007). The two other tasks regarded biographical knowledge and are described below. The control group was also divided roughly equally between age and sex, with a total of 49 participants. They performed three tasks which were structurally similar to the training tasks, but regarded neutral topics. Two weeks later, participants again recounted their life story and answered a series of questionnaires. Sessions lasted between 45 and 60 minutes.

Material

Intelligence. Fluid intelligence was measured with the digit-symbol substitution subtest, crystallized intelligence with the vocabulary subtest of the German version of the Wechsler Intelligence Scale for Children – R (Tewes, Rossmann, & Schallberger, 1991) or, for the 20-year-olds, with the German version of the Wechsler Adult Intelligence Scales (Tewes, 1991). In this study standardized IQ-values were higher in the group of 8-year-olds for both measures than in the other three age groups, so these values were z-standardized separately for each age group.

Biographical knowledge. Two tests of biographical knowledge were administered (Habermas, 2007). In a test of knowledge of age norms, 25 normative life events such as ‘learn to talk’, ‘first time I love’, ‘leave parents’ home’, and ‘divorce’ were presented on cards. A lengthy slip of paper (109 by 10.5 cm) with nine intervals was presented which symbolized the first nine decades of life. “Life starts with birth at the left and ends with ninety years at the right. Please put each card with this black arrow next to the age at which you think it usually occurs in the life of a person. If you are not sure what the card means please ask me. If you think that there is no age at which the event usually occurs you may put the card away.” Cards could be placed freely with unlimited overlaps allowed.

In a test of knowledge of biographical salience participants sorted 40 events each written on a card either on a pile saying “not necessarily included in a life narrative” (e.g., ‘losing last milk tooth’, ‘having measles’) or on a pile saying “included in a life narrative” (e.g., ‘first time in love’, ‘severe accident’). They were asked to “Please consider for each of these events, whether you would expect it to be included in a life narrative and place the card on the corresponding pile.”

The indicator for knowledge of biographical salience was calculated as the percentage of wrong salience attributions for 36 events (4 events had to be eliminated; cf. Habermas, 2007). The indicator for knowledge of age norms was calculated as the mean of the absolute deviations from the normative age taken from a separate sample of adults in years. To turn these indicators into positive indicators of knowledge, they were multiplied with -1 for this study.

Biographical practices. The frequency of five biographical practices (keeping a diary, writing poems, looking at old pictures, reading old letters, reading biographies) (Zinnecker, 1985) were reported on 9-point scale ranging from *very often* to *never*. Biographical practices had a moderate reliability of $\alpha = .68$.

Seven most important memories and life narratives. Participants were instructed twice, two weeks apart, to recount their own life stories for about 15 minutes. They were informed that the

second interviewer did not know the first life narrative. Prior to recounting their life, they wrote their seven most important specific memories on index cards and ordered them in chronological order on the table in front of them. They were instructed to include these seven memories in their life narratives. The memory cards served facilitate the task for the youngest participants, reducing memory load and combinatorial task requirements, to make sure that age differences did not depend primarily on differences in these skills. Instructions said: “First I’d like to ask you to think about the seven most important events which happened in your life. These may be events which just happened or they may have happened a long time ago. Then please write your seven most important memories on these seven cards. Please name only memories of very specific events. [...] Now please order these cards in the temporal sequence in which they have happened on the table in front of you.” The following life narrative instruction said: “Next I’d like you to tell me a story about your whole life. Please think about all the events which have happened in your life since when you were born. Please integrate the seven events into your story. For example you can tell me about the most important events in your life and the biggest changes. You can tell me things which someone like me who doesn’t know you might like to know about you. You can also tell me how what you have experienced is still important to you today and how it has influenced what kind of person you are today. That’s your task. Please take about 15 minutes time to tell your story. I will not interrupt you. After 10 minutes I am going to tell you that you still have five minutes. There are no right or wrong answers.” Participants were asked to repeat the instruction to make sure they had understood it. After the life narrative, participants dated all seven most important memories. The additional eight participants told their lives once without being asked for important memories first, to explore the effect of the memory cards.

Life narratives were tape recorded and transcribed verbatim. The text was divided into propositions, that is main or subordinate clauses with a subject and predicate. Incomplete propositions were coded if the meaning was self-evident. Two coders independently divided twenty life narratives balanced for sex, age, treatment, and measurement time into propositions, agreeing on 98.6% of the propositions. The remaining life narratives were divided into propositions, half by each coder.

Beginnings and endings. A preliminary coding scheme that had been developed on the basis of 40 life narratives (Habermas, 2006) was refined. A variety of criteria were used to define a 5-point ordinal scale for the degree of elaboration of the beginning and a 4-point ordinal scale for the elaboration of the ending. We defined well-formed beginnings and endings as those which contribute to a linear temporal structure of the narrative by beginning at birth and ending in the present. Only five life narratives started before birth, a case that was therefore not represented in the coding scheme. For beginnings, we assumed that additional details such as birthday and birthplace provide biographical facts, while providing a story surrounding one’s birth is a classical device for foreshadowing a personality to come, thereby contributing to global coherence. For endings, we assumed that both a global evaluation of the present point reached in life as well as a prospect into future conclude the story. Codes are listed in Table 1 with an example for each value. Interrater reliability was calculated on the basis of 40 life narratives distributed equally across all age groups and coded independently by two coders, resulting excellent Cronbach’s $K = .94$ for beginnings and $K = .96$ for endings. The remaining life narratives were coded by the second author alone. Between the first and the second life narrative, quality of beginnings correlated by $r = .71$ and of endings by $r = .67$.

Anachronies. To construct a rough indicator of how much life narratives followed a linear temporal order at the macro-level, we coded three kinds of deviations from a linear temporal

order. First, we coded temporal leaps ahead or back after which the narrator did not return to the prior temporal line of narration. Second, we coded temporal insertions, that is flashbacks and flashforwards after which the narrator returned to the prior temporal line. Typically, these insertions are related thematically to what the narrator had been speaking about before and serve an illustrative function. Third, unmarked anachronies were coded if the narrator does not indicate when in a life an event happened, leading to a temporal disorientation of the listener. To be coded as leap, insertion or unmarked anachrony, an event had to encompass at least four propositions. Single class intraclass correlations were based on 20 life narratives, 12 from this study and eight from a different sample of life narratives, half clinically depressed, half non-clinical adult controls (Habermas, Ott, Schubert, Schneider, & Pate, in press) for the number of the three types of anachronies per life narrative. Interrater reliabilities were good to excellent: $r_{ic} = .95$ for temporal leaps, $r_{ic} = .89$ for temporal insertions, and $r_{ic} = .96$ for unmarked anachronies. To adjust the number of anachronies to the length of narratives, we divided the frequency of three types of anachronies by the number of propositions. Between the first and the second life narrative, temporal leaps correlated by $r = .28$, temporal insertions by $r = .15$, and unmarked anachronies by $r = .51$.

Local temporal indicators and exemplifications. Life narratives were coded for a variety of local indicators of global coherence (Habermas & de Silveira, 2007, , in press). Two of these are reported here. One set of indicators were temporal indicators which allow the listener to locate an event in the life of the narrator. These were expressions of distance from the present (e.g., ‘two years ago’), age, dates, and biological or social life phases (‘in day care’, ‘when I learned how to walk’). Interrater reliability based on 20 life narratives sampled equally from all age groups was $\kappa = .90$. The remaining life narratives were coded by one coder. In addition, life narratives were coded for exemplifications, i.e. illustrations of general statements by specific episodes (first $\kappa = .88$). These will be reported here because they often constitute temporal deviations from a linear order of recounting (insertions). The number of these local indicators was divided by the number of propositions.

Rating scales for global coherence. To complement the coding of propositions, three 7-point scales were used to rate global properties of whole life stories, specifically, temporal orientation provided by the narrative, either by narrating chronologically or by providing temporal indicators, the degree to which the developmental consequences of an event are explicated, and the plausibility of the transitions between events. Single intraclass correlations were computed between two raters on the basis of twenty life narratives, resulting in correlations of $r_{ic} = .80$, $.84$, and $.82$. Remaining life narratives were rated half by each rater.

Results

Throughout analyses, continuous variables were first tested for deviation from a normal distribution and for outliers. Outliers and variables were transformed to approach normal distribution whenever necessary. We first tested whether there was a systematic effect of repeated telling and training, we entered all five indicators (beginnings, endings, leaps, insertions, unmarked anachronies) into a multivariate analysis of variance (MANOVA) for repeated measurement with one factor (training). Neither repeated telling, Pillais’ $F(1, 101) = .14$, $p = .71$, partial $\eta^2 = .00$, nor training, Pillais’ $F(1, 101) = .00$, $p = .96$, partial $\eta^2 = .00$, nor the interaction between the two, Pillais’ $F(1, 101) = .04$, $p = .85$, partial $\eta^2 = .00$, was significant. Therefore we averaged all indicators across both groups and both life narratives for all analyses.

Comparison with Life Narratives without Memory Cards

To control for the effects of the instruction to first recall seven most important memories, to

order them chronologically and to include them in the life narrative, the life narratives of the eight extra participants without this prior instruction were compared with the main corpus of life narratives, using Mann-Whitney Rank tests. None of the five indicators of temporal macrostructure differed significantly. There was, however, a trend for the life narratives generated without cards to show greater temporal order. Comparing age-specific means in the two groups, all means of endings and unmarked anachronies, and three of four means of beginnings indicated greater temporal order in life narratives generated without cards. There was no overall difference for either temporal indicators or rated temporal orientation. This implies that it was not only our specific instruction which motivated participants to structure their narratives in a linear temporal fashion. The only significant difference was that the eight narratives without cards were rated as having more plausible transitions, $Z = -2.94$, $p = .003$ ($M = 4.19$, $SD = .60$, than those with cards, $M = 3.01$, $SD = 1.15$ for all others). This implies that having to integrate seven distinct memories makes it more difficult to find good transitions between episodes.

Age Differences

Table 2 shows relative frequencies of the qualities of beginnings and endings of the two life narratives per participant (total of 204 life narratives) for each age group. There is a clear linear age trend. The largest difference is between ages 8 and 12: 75% of life narratives by 8 year-olds begin not at birth but sometime later, and 63.5% do not end in the present. When testing age differences, we tested gender simultaneously to explore its possible impact. We calculated a MANOVA with age and gender as factors and the five indicators of temporal macrostructure as dependent variables (see Table 3 for means and standard deviations). Only age had a significant multivariate effect, Pillais' $F(15, 276) = 7.67$, $p = .000$, partial $\eta^2 = .29$. Univariate tests revealed that only temporal leaps did not vary with age, $F(3, 94) = .16$, $p = .92$, partial $\eta^2 = .01$, while the other indicators did: temporal insertions, $F(3, 94) = 7.25$, $p = .000$, partial $\eta^2 = .19$, unmarked anachronies, $F(3, 94) = 15.99$, $p = .000$, partial $\eta^2 = .34$, beginnings, $F(3, 94) = 16.23$, $p = .000$, partial $\eta^2 = .34$, and endings, $F(3, 94) = 49.55$, $p = .000$, partial $\eta^2 = .61$. Beginnings and endings became more well-formed with age, and unmarked anachronies decreased continuously with age, while insertions increased from age 8 to age 12 only to unexpectedly decrease again between ages 12 and 16. Planned contrasts between neighboring age groups resulted in highly significant differences between the 8- and the 12-year-olds with $p = .000$ for temporal insertions and unmarked anachronies, $p = .001$ for beginnings, and $p = .003$ for endings. The 12- and 16-year-olds differed significantly in beginnings and endings as expected with probabilities of $p = .040$, and $p = .000$, while insertions decreased significantly, $p = .023$. No indicator differed significantly between the two oldest age groups.

Correlations with other Indicators of Temporal Order

We expected to find a positive correlation between the beginnings and endings and a negative correlation between these two and unmarked anachronies. Because these indicators all correlate with age, age was partialled out. The zero-order correlation between beginnings and endings was $r = .53$, but decreased substantially when age was partialled out, $pr = .19$ ($p = .053$). The partial correlation of unmarked anachronies with beginnings was significant but also low, and the correlation with endings was even lower (see Table 4).

We explored correlations with the relative frequency of local temporal indicators, which allow temporal orientation within life, and with the relative frequency of exemplifications, which provide events as exemplary proofs for general statements and may therefore often have the temporal quality of insertions. Temporal indicators did correlate with endings, but not with

beginnings. They also correlated with temporal leaps, but not with the two other kinds of anachronies. Temporal leaps may require the use of more temporal indications to enable the listener to remain temporally oriented. Exemplifications, which by themselves contribute not to the linear, but to the hierarchical organization of narrative, correlated only with temporal insertions as expected.

To validate our measures of temporal macrostructure, we expected that beginnings and endings and unmarked anachronies would correlate with a global measure of temporal orientation, but not so with global measures of aspects of causal and thematic coherence. As expected, unmarked anachronies and beginnings and endings correlated with the global rating of temporal orientation, but not with the other two aspects of global coherence of life narratives. The only unexpected correlation was a negative correlation of unmarked anachronies with the plausibility of transitions between events. Post hoc this correlation does make sense insofar as the plausibility of transitions may be enhanced by the clarity of the temporal succession of events.

Predictors of Temporal Macrostructure in Life Narratives.

We explored whether the three developmental indicators of temporal macrostructure, quality of beginnings and endings and unmarked anachronies, correlated with biographical knowledge, frequency of biographical practices, and intelligence. We expected to find a developmental cluster of biography-related abilities and practices. This might have been revealed in higher correlations of temporal macrostructure with biographical knowledge and biographical practices than with general intelligence. Unfortunately for this purpose, the indicators of biographical knowledge were measured only in roughly half of the sample ($N = 53$), which was distributed about equally across all age groups and both genders, because these tasks also served as a training device.

Indeed, four of nine partial correlations with biographical variables and only one of six partial correlations with fluid and crystallized intelligence were significant (see Table 4). To obtain a more straightforward comparison, we z-standardized beginnings, endings, and unmarked anachronies and averaged them. This composite indicator of temporal macrostructure of life narratives correlated significantly with knowledge of biographical age norms, $rp = .33$, $p = .019$, with knowledge of the biographical salience of life events, $rp = .29$, $p = .036$, as well as with the frequency of biographical practices, $rp = .27$, $p = .007$. Only the correlation with fluid intelligence, $rp = .26$, $p = .009$, was also significant, whereas correlation with crystallized intelligence was not, $rp = .13$, $p = .194$. Creating temporal macrostructure in life narratives is apparently facilitated by specific biographical practices and knowledge as well as by general cognitive abilities to manipulate numbers.

Discussion

While there is a burgeoning literature on beginnings and endings of fictional narratives (Haubrichs, 1995) and some developmental research on beginnings and endings of single oral narratives (Berman & Katzenberger, 2004; Peterson & McCabe, 1983), this is one of the first studies of beginnings and endings of life narratives. Our approach to define the global structure of life narratives is based on the essentially sequential nature of any narrative. The largest developmental progression from a life narrative which does not begin in the beginning and does not end at the end, to a narrative which does, very clearly takes place between ages 8 and 12. By then a majority of narratives begins with birth or earlier and ends at the present time or in the future. The acquisition of a basic temporal order by early adolescence is also reflected by the steep decrease of unmarked anachronies. The developmental step between ages 8 and 12 is even

more impressive considering the relatively higher intelligence of the younger group.

Although by age 12 the normative linear order is established, beginnings and endings still lack a mature elaboration. They still miss an extended temporal contextualization in a prehistory and a future, as well as prospective foreshadowing and retrospective global evaluations which tie beginning and end to an overarching topic and evaluation of one's life. At age 16, a majority of life narratives ends either with an outlook or a retrospective evaluation, but few include a birth narrative or go back to before birth. It remains an open question whether the mature form of life narrative as defined in this paper remains a minority product across all age groups.

This study has also shown that with development life narratives do not simply become more linear. The increase in temporal orientation and therefore also linear temporal order is accompanied by an initial increase in insertions. Thus by age 12 life narratives do follow a basic linear order, which allows the use of insertions. These add a hierarchical structure to the linear order. The relative decrease of insertions after age 12 remains to be explained.

The correlations between beginnings, endings, and absence of unmarked anachronies are low once age is partialled out, while beginnings and endings are fairly stable across a two week interval. Correlations with the global rating of temporal orientation confirm the validity of unmarked anachronies as severely undermining temporal orientation and they confirm the contributions of well-formed beginnings and endings to temporal orientation. The correlation of the temporal macrostructure with global temporal orientation is specific insofar as only one correlation with the other two ratings of global coherence was significant. The relation between temporal macrostructure and local temporal indicators is more complex. This might be due to their ambivalent nature. A high rate of temporal indicators on the one hand helps establish temporal orientation. On the other hand a high rate of additional temporal indicators may be motivated by a large number of leaps and insertions which require temporal indicators. Their use correlates with quality of endings, but not with beginnings, possibly because a well-formed ending turns back on life and therefore requires temporal indicators. The correlation of exemplifications with temporal insertions confirms that they are one of the possible uses of insertions. The correlations of beginnings, endings, and unmarked anachronies with biographical knowledge and practices were small but significant and suggest a cluster of abilities and practices related to biography.

These results suggest that between late childhood and middle to late adolescence the textual strategies for presenting one's life in a basically linear fashion evolve. Furthermore, there is a developmental trend to contextualize one's life by embedding it in the family history and to evaluate one's life for the purpose of gaining insight into the past and direction for the future.

Implications

This study approaches the third level of McAdams' (1995) conceptualization of personality, life stories, from a developmental perspective. We expand the empirical basis of McAdams' view by providing evidence on the textual structure of life narratives. Only once the basic ability to construct life narratives with the normative structure outlined here has developed, we would argue, may life narratives reveal their specific information about personality. This regards all information which depends on the overall structure of the life story, such as high- and low-points in a life, turning points, consequential experiences and experiences that have formed one's personality. Other information contained in autobiographical memories, such as the strength of specific motives, may not depend on the development of the overall structure of the life story. Developmental research thus provides the normative frame within which individual differences may be described. Patients with a major depression, for example, narrate their lives in a less

linear form (Habermas et al., in press).

The findings also have implications for three more specific fields of research. First, we found that an evaluative stance with regard to the personal life story and its use for planning the future development of one's personality emerges in middle to late adolescence. This provides additional evidence that only in adolescence individuals may begin to reflect upon who they are and who they want to become (Erikson, 1968). Some of the older adolescents began to spontaneously use insights into past mistakes and into effects of negative aspects of one's personality (Bluck & Glück, 2004; Pasupathi, Mansour, & Brubaker, 2007; Thorne et al., 2004) to plan their future. Theories of individuals as the planners of their own development (Brandtstädter & Rothermund, 2002) therefore need to take into account that evaluating the past for planning future development originates in adolescence (Lerner, Freund, De Stefanis, & Habermas, 2001).

Second, the gradual extension of life narratives into the past speaks of the growing ability to contextualize one's development within the extended history of the family. Although the contextualization of one's life within a wider historical context would be the logical next step, especially if the development of historical understanding is conceived in terms of narrative abilities (Espin, Cevasco, van den Broek, Baker, & Gersten, 2007), it seems that most individuals leave out historical context if their personal lives have not been affected by major developments such as a war. Thus in our sample only those who had fled the war in former Yugoslavia mentioned historical circumstance, irrespective of age. Nevertheless including biographical information about the early personal history and prehistory indicates the emergence of the ability to take a distanced view and consider familial and social influences on one's development.

Third, another aspect of the inclusion of early parts of life in life narratives is that shared family narratives, stories which in most cases have been repeatedly told to the child and adolescent, are integrated into the self. Family narratives include a great many shared, but also non-shared experiences. Both the process of transmitting these narratives and the content of the narratives are related to central characteristics of the children and their relationship to their parents (Bohanek, Marin, Fivush, & Duke, 2006; Hayden, Singer, & Chrisler, 2006). The process of integration of these narratives into the life story may be a first step in enabling young adults to understand and possibly question these parental views of themselves.

Limitations and Research Directions

Although the sample used for this study was not large, the results are rendered more reliable by the use of repeated life narratives. The sample was, however, educationally and culturally homogeneous as all participants came from the higher educational level of a central European city. Although a substantial minority of participants had one or two non-German parents, participants had grown up in a fairly homogenous culture. Therefore it remains unclear just how specific the form of life narrative we have defined as mature is to this cultural and educational milieu. We do expect cultural variations as the prototype of life narrative may vary between cultures, and have therefore used the term cultural concept of biography (Habermas & Bluck, 2000). Another constraint on the form of life narratives was the instruction which asked participants both for a linear structure (requiring them to temporally order the memory cards) and for a developmental account of how the past has influenced what kind of person they have become. Without the linear ordering of memory cards, however, life narratives tended to follow a linear order even more. A further limitation results from the age groups studied. The most mature forms of life narratives as defined here were only used by a minority of the oldest age group. If they were used by a majority of middle aged or older adults, this would strengthen our

developmental analysis. However, it is not a prerequisite for the validity of our definition of mature life narratives, because there may be functional conditions and stylistic individual differences which motivate individuals not to produce the most mature form. If, however, in other cultures other concepts of biography prevail, a developmental analysis of life narratives in those cultures would have to take the local concept of 'good story' and of biography into account.

Future studies will have to replicate these findings with different educational and cultural samples. The concurrent findings with written life narratives from Denmark (Bohn & Berntsen, 2007) are encouraging. A major extension would be the study of life narratives of middle aged and older adults to test the validity of the model. The analysis of repeated tellings of life narratives over several years would allow to test whether specific parts of life are especially stable. Birth narratives and earliest memories are good candidates for stability, as they often form a stable part of shared family mythology. From the point of view of personality psychology, an especially interesting question is whether these developments simply reflect cognitive or narrative development or whether they reflect more specifically biographical and autobiographical abilities. Future studies therefore should include separate tests of single narratives and tests of temporal macrostructure in comparably complex narratives such as in retellings of novels and large-scale historical accounts as well as measures of biographical knowledge and practices.

References

- Adler, A. (1929). *The science of living*. New York: Anchor Books.
- Adler, J. M., Wagner, J. W., & McAdams, D. P. (2007). Personality and the coherence of psychotherapy narratives. *Journal of Research in Personality, 41*(6), 1179-1198.
- Baerger, D. R., & McAdams, D. P. (1999). Life story coherence and its relation to psychological well-being. *Narrative Inquiry, 9*(1), 69-96.
- Bauer, P. J. (2006). *Remembering the times of our lives: Memory in infancy and beyond*. Mahwah, CT: Erlbaum.
- Berman, R. A., & Katzenberger, I. (2004). Form and function in introducing narrative and expository texts: A developmental perspective. *Discourse Processes, 38*(1), 57-94.
- Berntsen, D., & Rubin, D. C. (2004). Cultural life scripts structure recall from autobiographical memory. *Memory & Cognition, 32*(3), 427-442.
- Bluck, S., Alea, N., Habermas, T., & Rubin, D. C. (2005). A tale of three functions: The self-reported uses of autobiographical memory. *Social Cognition, 23*(1), 91-117.
- Bluck, S., & Glück, J. (2004). Making things better and learning a lesson: Experiencing wisdom across the lifespan. *Journal of Personality, 72*(3), 543-572.
- Bluck, S., & Habermas, T. (2000). The life story schema. *Motivation and Emotion, 24*(2), 121-147.
- Bohanek, J. G., Marin, K. A., Fivush, R., & Duke, M. P. (2006). Family narrative interaction and children's sense of self. *Family Process, 45*(1), 39-54.
- Bohn, A., & Berntsen, D. (2007). *Culture and coherence: Life story development and the acquisition of cultural life scripts in childhood and adolescence*. Unpublished manuscript, Aarhus, DK.
- Brandtstädter, J., & Rothermund, K. (2002). Intentional self-development: Exploring the interfaces between development, intentionality, and the self. In L. J. Crockett (Ed.), *Agency, motivation, and the life course* (pp. pp. 31-75). Lincoln, NE: .University of Nebraska Press.

- Carlson, R. (1981). Studies in script theory: I. Adult analogs of a childhood nuclear scene. *Journal of Personality and Social Psychology*, 40(3), 501-510.
- Coe, R. N. (1984). *When the grass was taller. Autobiography and the experience of childhood*. New Haven, CT: Yale University Press.
- Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, 107(2), 261-288.
- Conway, M. A., Singer, J. A., & Tagini, A. (2004). The self and autobiographical memory: Correspondence and coherence. *Social Cognition*, 22(5), 491-529.
- Damon, W., & Hart, D. (1986). Stability and change in children's self-understanding. *Social Cognition*, 4(2), 102-118.
- Erikson, E. H. (1968). *Identity: youth and crisis*. Oxford, UK: Norton.
- Espin, C. A., Cevasco, J., van den Broek, P., Baker, S., & Gersten, R. (2007). History as narrative: The nature and quality of historical understanding for students with LD. *Journal of Learning Disabilities*, 40(2), 174-182.
- Fiese, B. H., & Bickham, N. L. (2004). Pin-curling grandpa's hair in the comfy chair: Parents' stories of growing up and potential links to socialization in the preschool Years. In B. H. F. Michael W. Pratt (Ed.), *Family stories and the life course across time and generations* (pp. 259-277). Mahwah, CT: Erlbaum.
- Fiese, B. H., Sameroff, A. J., Grotevant, H. D., Wamboldt, F. S., Dickstein, S., Fravel, D. L., et al. (1999). The stories that families tell: Narrative coherence, narrative interaction, and relationship beliefs. *Monographs of the Society for Research in Child Development*, 64(2), 1-162.
- Genette, G. (1982). *Narrative discourse*. Ithaca, NY: Cornell University Press.
- Greene, A. L. (1986). Future-time perspective in adolescence: The present of things future revisited. *Journal of Youth and Adolescence*, 15(2), 99-113.
- Habermas, T. (2006). "Kann ich auch ganz, ganz am Anfang anfangen, als ich noch ganz klein war?" Wie Kinder und Jugendliche lernen, Lebenserzählungen zu eröffnen und zu beenden ["Can I start at the very, very beginning, when I was real little?" How children and adolescents learn how to open and end life narratives]. In H. J. Markowitsch (Ed.), *Warum Menschen sich erinnern können* (pp. 256-275). Stuttgart, GE: Klett-Cotta.
- Habermas, T. (2007). How to tell a life: The development of the cultural concept of biography across the lifespan. *Journal of Cognition and Development*, 8, 1-31.
- Habermas, T., & Bluck, S. (2000). Getting a life: The emergence of the life story in adolescence. *Psychological Bulletin*, 126(5), 748-769.
- Habermas, T., & de Silveira, C. (2007). *The Development of global coherence in life narratives across adolescence: Temporal, causal and thematic aspects*. Unpublished manuscript, Frankfurt a.M., GE.
- Habermas, T., & de Silveira, C. (in press). The development of global coherence in life narratives across adolescence: Temporal, causal and thematic aspects. *Developmental Psychology*.
- Habermas, T., Fröhlich, A., & Diel, V. (2007). *The Autobiographical Reasoning Interview: Autobiographical reasoning from late childhood to early adulthood*. Unpublished manuscript, Frankfurt a.M., GE.
- Habermas, T., Ott, L.-M., Schubert, M., Schneider, B., & Pate, A. (in press). Stuck in the past: Negative bias, explanatory style, temporal order, and evaluative perspective in life narratives of clinically depressed individuals. *Depression and Anxiety*.

- Habermas, T., & Paha, C. (2001). The development of coherence in adolescent's life narratives. *Narrative Inquiry, 11*(1), 35-54.
- Haden, C. A., Haine, R. A., & Fivush, R. (1997). Developing narrative structure in parent-child reminiscing across the preschool years. *Developmental Psychology, 33*(2), 295-307.
- Haubrichs, W. (1995). Kleine Bibliographie zu 'Anfang' und 'Ende' in narrativen Texten (seit 1965) [Small bibliography regarding beginnings and endings of narrative texts]. *Zeitschrift für Literaturwissenschaft und Linguistik, 99*, 36-50.
- Hayden, J. M., Singer, J. A., & Chrisler, J. C. (2006). The transmission of birth stories from mother to daughter: Self-esteem and mother-daughter attachment. *Sex Roles, 55*(5-6), 373-383.
- Holdenried, M. (2000). *Autobiographie [Autobiography]*. Stuttgart: Reclam.
- Kernberg, O. F. (1984). *Severe personality disorders*. New Haven, CT: Yale University Press.
- Labov, W., & Waletzky, J. (1967). Narrative analysis: oral versions of personal experience. In I. Helm (Ed.), *Essays on the verbal and visual arts. Proceedings of the 1966 Annual Spring Meeting of the American Ethnological Society* (pp. 12-44). Seattle: University of Seattle Press.
- Lejeune, P. (1989). *On autobiography*. Minneapolis: University of Minnesota.
- Lejeune, P. (1996). *Moi aussi*. Paris: Bethy.
- Lerner, R. M., Freund, A. M., De Stefanis, I., & Habermas, T. (2001). Understanding developmental regulation in adolescence: The use of the Selection, Optimization, and Compensation model. *Human Development, 44*(1), 29-50.
- Linde, C. (2001). Narrative and social tacit knowledge. *Journal of Knowledge Management, 5*(2), 160-170.
- Louwerse, M. M., & Graesser, A. C. (2006). Macrostructure. In E. K. Brown (Ed.), *The encyclopedia of language and linguistics*. Amsterdam: Elsevier.
- Luborsky, M. R. (1993). The romance with personal meaning in gerontology: Cultural aspects of life themes. *The Gerontologist, 33*(4), 445-452.
- Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development, 50*(1-2), 66-104.
- McAdams, D. P. (1985). *Power and intimacy*. New York: Guilford.
- McAdams, D. P. (1995). What do we know when we know a person? *Journal of Personality, 63*(3), 365-396.
- McAdams, D. P., Anyidoho, N. A., Brown, C., Huang, Y. T., Kaplan, B., & Machado, M. A. (2004). Traits and stories: Links between dispositional and narrative features of personality. *Journal of Personality, 72*(4), 761-784.
- McAdams, D. P., & Pals, J. L. (2006). A New Big Five: Fundamental Principles for an Integrative Science of Personality. *American Psychologist, 61*(3), 204-217.
- McAdams, D. P., Reynolds, J., Lewis, M., Patten, A. H., & Bowman, P. J. (2001). When bad things turn good and good things turn bad: Sequences of redemption and contamination in life narrative and their relation to psychosocial adaptation in midlife adults and in students. *Personality and Social Psychology Bulletin, 27*(4), 474-485.
- McCabe, A., Capron, E., & Peterson, C. (1991). The voice of experience: The recall of early childhood and adolescent memories by young adults. In C. Peterson (Ed.), *Developing narrative structure* (pp. 137-173). Mahwah, CT: Erlbaum.

- McCooley, D. (1995). Australian autobiographies of childhood: Beginning and myth. *Southerly: the Magazine of the Australian English Association*, 55, 132-146.
- McLean, K. C., Pasupathi, M., & Pals, J. L. (2007). Selves creating stories creating selves: A process model of self-development. *Personality and Social Psychology Review*, 11(3), 262-278.
- Nelson, K., & Fivush, R. (2004). The emergence of autobiographical memory: A social cultural developmental theory. *Psychological Review*, 111(2), 486-511.
- Nilsson, B. G. (2002). Narratives of birth in Swedish popular autobiography. *Folklore*, 20, 53-63.
- Norris, J. E., Kuiack, S., & Pratt, M. W. (2004). "As long as they go back down the driveway at the end of the day": Stories of the satisfactions and challenges of Grandparenthood. In B. H. Fiese (Ed.), *Family stories and the life course across time and generations* (pp. 353-373). Mahwah, CT: Erlbaum.
- Ochs, E., & Capps, L. (2001). *Living narrative. Creating lives in everyday storytelling*. Cambridge, MA: Harvard University Press.
- Pals, J. L. (2006). *Constructing the "Springboard Effect": Causal Connections, Self-Making, and Growth Within the Life Story*. McAdams, Dan P (Ed); Josselson, Ruthellen (Ed); Lieblich, Amia (Ed). (2006). Identity and story: Creating self in narrative. (pp. 175-199).
- Pasupathi, M., & Mansour, E. (2006). Adult Age Differences in Autobiographical Reasoning in Narratives. *Developmental Psychology*, 42(5), 798-808.
- Pasupathi, M., Mansour, E., & Brubaker, J. R. (2007). Developing a life story: Constructing relations between self and experience in autobiographical narratives. *Human Development*, 50(2-3), 85-110.
- Pasupathi, M., Weeks, T., & Rice, C. (2006). Reflecting on life: Remembering as a major process in adult development. *Journal of Language and Social Psychology*, 25(3), 244-263.
- Peterson, C., & McCabe, A. (1983). *Developmental psycholinguistics: Three ways of looking at a child's narratives*. New York: Plenum Press.
- Pillemer, D. B. (1998). *Momentous events, vivid memories*. Cambridge, MA: Harvard University Press.
- Ribeiro, B. T. (1994). *Coherence in psychotic discourse*. New York: Oxford University Press.
- Ricoeur, P. (1985). *Time and narrative*. Chicago, IL: Chicago University Press.
- Rosenthal, G. (1995). *Erlebte und erzählte Lebensgeschichte*. Frankfurt a.M., GE: Campus.
- Rubin, D. C., & Berntsen, D. (2003). Life scripts help to maintain autobiographical memories of highly positive, but not highly negative, events. *Memory & Cognition*, 31(1), 1-14.
- Schlumbohm, J. (1998). Constructing individuality: Childhood memories in late eighteenth-century 'empirical psychology' and autobiography. *German History*, 16(1), 29-42.
- Schütze, F. (1984). Kognitive Figuren des autobiographischen Stegreiferzählens [Cognitive structures of improvised personal narratives]. In G. Roberts (Ed.), *Biographie und soziale Wirklichkeit* (pp. 78-118). Stuttgart: Metzler.
- Selman, R. (1980). *The development of social understanding*. New York: Academic Press.
- Shumaker, W. (1954). *English autobiography - its emergence, materials, and form*. Berkeley, Los Angeles: University of California Press.
- Singer, J. A. (2004). Narrative identity and meaning making across the adult lifespan: An introduction. *Journal of Personality*, 72(3), 437-459.
- Sterne, L. (1967). *Tristram Shandy*. London: Penguin.

- TenHouton, W. D. (1999). Text and temporality: Patterned-cyclical and ordinary-linear forms of time-consciousness, inferred from a corpus of Australian aboriginal and Euro-Australian life-historical interviews. *Symbolic Interaction*, 22(2), 121-137.
- Tewes, U. (1991). *HAWIE-R*. Bern, SW: Huber.
- Tewes, U., Rossmann, P., & Schallberger, U. (1991). *HAWIK-III*. Bern, SW: Huber.
- Thorne, A. (2000). Personal memory telling and personality development. *Personality and Social Psychology Review*, 4(1), 45-56.
- Thorne, A., McLean, K. C., & Lawrence, A. M. (2004). When Remembering Is Not Enough: Reflecting on Self-Defining Memories in Late Adolescence. *Journal of Personality*, 72(3), 513-541.
- Walker, L. J., & Frimer, J. A. (2007). Moral personality of brave and caring exemplars. *Journal of Personality and Social Psychology*, 93(5), 845-860.
- Woike, B., & Polo, M. (2001). Motive-related memories: Content, structure, and affect. *Journal of Personality*, 69(3), 391-415.
- Zinnecker, J. (1985). Literarische und ästhetische Praxen in Jugendkultur und Jugendbiographie [Literary and aesthetic practices in youth culture and youth biography]. In J. Zinnecker (Ed.), *Jugendliche und Erwachsene 1985* (Vol. 2, pp. 143-384). Opladen, GE: Leske & Budrich.

Table 1
Coding schemata for quality of beginnings and endings (with examples)

Value	Criteria
Beginnings	
0	Temporal location of beginning is unclear “OK, I was still li-, when earlier, when we moved into this house, / of my mother, the brother of my mother, he had a wife, / and then they were separated, /and now we are together again ...” (Fred, age 8)
1	Beginning any time after birth “Well, when I was still half a baby, well not really anymore, / when I knew how to crawl/ I once played with my sisters” (Anna, age 8)
2	Beginning at birth “OK, what I can still remember, / that I – that a good friend of my mother was there at my birth, /and that they gave me a musical ducky/ which I still have today ...” (Julia, age 12)
3	Beginning at birth and biographical data (e.g., name, place, or date of birth) “Well, I was born in Croatia, in Zagreb, /well, that was my birthday, the 12 th of November 1990, and when I was real little,/ the war broke out, / and my parents had to leave” (Kevin, age 12)
4	Beginning at birth, biographical data, and additional circumstances or events “Well, in the beginning was my birth, /that was here in Frankfurt in the Mother Mary Hospital, that’s right here in the <i>Nordend</i> [quarter of town], / well, and I believe, / I came one week early or one week late, / I don’t remember well, / and ever since, / I’ve been stuck in Frankfurt, not for long anyway ...” (Franz, age 20)
Endings	
0	Arbitrary ending not in the present [Fred speaks of a frightening experience, then of a nightmare he used to have, and finally of the following experience which is not temporally specified] “ ... or once I watched a horror movie, /in which a boy, he sees dead ma-, men and there, / that was scary, real scary those two days, / I was a little bit scared, / but then very fast everything was OK” (Fred, age 8)
1	Ending at present time [Recounts an accident which happened a year earlier] “then she brought me to the emergency unit. / That’s all have to say, and now nothing really happened” (Anna, age 8)
2	Ending at present with either global evaluation or prospect [Discusses her recent experiences with ballet, weighing positive against negative experiences] “but there were also many positive things, / laughed a lot, / there’s lot of fun with the dancers, / who came along, / competitions were always funny, also when we travelled all over Germany” (Margret, age 16)
3	Ending at present with both global evaluation and prospect [Speaks about the major he chose at College, how dissatisfied he was, that he started taking classes in a different subject which suits him much better, and he explains why] “What will happen later, / I don’t know, / but up to now I like it, / I’ve been taking those classes since November, / but it was too late to switch majors, / but I will switch majors next semester” (Franz, age 20)

Table 2
Quality of Beginnings and Endings by Age (Percent within each Age Group)

Code	Age			
	8	12	16	20
Beginnings				
0 Temporal beginning unclear	25.0	5.4	3.8	---
1 Any time after birth	50.0	35.7	26.9	13.5
2 At birth	23.1	16.1	13.5	9.6
3 At birth and biographical data (name, place, date)	1.9	35.7	46.2	67.3
4 At birth, biographical data, circumstances or events	--	7.1	9.6	9.6
Endings				
0 Arbitrary ending not in the present	63.5	30.4	5.8	3.8
1 In present time	36.5	55.4	32.7	25.0
2 In present with global evaluation or prospect	--	12.5	55.8	50.0
3 In present with global evaluation and prospect	--	1.8	5.8	21.2

Table 3
Means and Standard Deviations of Five Indicators of Temporal Macrostructure by Age

	Age							
	8		12		16		20	
Length								
Number of words	1169	(533)	1640	(698)	2061	(759)	2180	(446)
Number of propositions	146.7	(68.4)	201.0	(86.6)	248.6	(88.9)	274.8	(63.3)
Beginnings of narratives	1.00	(.60)	1.83	(.88)	2.32	(1.04)	2.52	(.73)
Endings of narratives	.36	(.42)	.79	(.52)	1.63	(.50)	1.82	(.52)
Narrative anachronies^a								
Temporal leaps	.37	(.47)	.33	(.26)	.39	(.32)	.34	(.28)
Temporal insertions	.02	(.08)	.33	(.34)	.18	(.21)	.21	(.23)
Unmarked anachronies	1.45	(1.30)	.64	(.61)	.27	(.29)	.11	(.13)

Note. ^aScores were calculated by multiplying the absolute number of anachronies by 100 and dividing it by the number of propositions in the narrative.

Table 4
Partial Correlations between Indicators of Temporal Macrostructure (Age Partialled Out)

	Beginning	Ending	Leaps	Insertions	Unmarked anachronies
Ending	.19				
Leaps	-.10	-.03			
Insertions	.03	-.21*	.08		
Unmarked anachronies	-.21*	-.16	.04	-.10	
Local linguistic indicators					
Temporal indicators (% propositions)	.07	.28**	.31**	-.14	-.12
Exemplifications (% propositions)	-.04	.05	-.04	.36***	-.05
Global Ratings					
Temporal orientation	.22*	.35***	.00	.12	-.57***
Biographical consequentiality	.12	.17	-.01	.02	-.02
Plausibility of transitions	.10	.00	-.16	.05	-.21*
Biographical knowledge					
Knowledge of age norms ^a	.04	.14	.11	.17	-.43**
Knowledge of biographical salience ^a	.27*	.07	.02	.02	-.23
Biographical practices (frequency)	.10	.21*	.00	.11	-.24*
Intelligence					
Crystallized intelligence	.03	.14	.10	.14	-.11
Fluid intelligence	.09	.36***	.04	.02	-.13
Age (zero-order correlations)	.56***	.76***	.00	.17	-.55***

Note *** $p = .000$ ** $p < .01$ * $p < .05$

^aN = 53