

## On the Persistence of Positive Events in Life Scripts

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### SUMMARY

The life script account of the reminiscence bump in autobiographical memories suggests that cultural expectations about the nature and timing of transitional events lead to the bump. The empirical evidence for life scripts is limited. We tested the generality of the life script by looking at the effects of culture, gender and cohorts. Turkish participants were asked (a) to list the seven most important events a newborn or an elderly would experience during his/her lifetime and (b) to estimate the prevalence, importance, age-at-event and emotional valence of each event. We obtained a clear life script containing more positive than negative events; there was also stronger agreement about the timing of positive than of negative events. The life script for this sample overlapped substantially with earlier data from Denmark. Events and their characteristics were not influenced by the gender of either the participants or the target person. Finally, many aspects of the life script, but not the bump, changed depending on for whom the script was constructed (newborn vs. elderly). Copyright © 2007 John Wiley & Sons, Ltd.

It is a truth universally acknowledged, that a single man in possession of a good fortune, must be in want of a wife (Jane Austen, *Pride and Prejudice*).

When people above the age of 40 are asked to remember specific autobiographical experiences, they remember more memories from their youth (10–30 years of age) than would be expected by a retention function (e.g. Rubin, Wetzler, & Nebes, 1986). This ‘bump’ has been one of the most robust findings in memory literature having been obtained under different methods of memory elicitation, for different materials and different participant groups. The bump appeared when participants were asked to report autobiographical memories in response to cue words (e.g. Jansari & Parkin, 1996; Rubin & Schulkind, 1997), when they were asked to report their most important memories (Rubin & Schulkind, 1997) or when they reported events that they would put in a book of their life story (Fitzgerald, 1996). Moreover, the bump extends to semantic information; Rubin, Rahhal and Poon (1998) found that participants had more knowledge about events (such as Academy awards) that took place when they were between 10–30 years of age than those when they were younger or older. The bump has also been obtained with Alzheimer’s disease patients, who suffer from significant memory problems (Fromholt & Larsen, 1991).

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The retrieval curve of autobiographical memories (including the bump) seems universal. Conway, Wang, Hanyu, and Haque (2005) compared samples from Japan, Bangladesh, the United Kingdom, China and the United States, and found no difference between the shape of the distribution for word-cued autobiographical memories. Since the current study is carried out with a Turkish sample, it should be noted that the bump as well as the other components of the autobiographical memory retrieval curve have been obtained in several studies with Turkish samples for word-cued autobiographical memories (Aydın, 2004; Demiryay & Gülgöz, 2006) as well as flashbulb memories (Tekcan & Demir, 2002).

A number of theoretical formulations have been offered to account for the bump. Rubin et al. (1998) put forward a *cognitive account*. They argued that many novel and significant autobiographical events take place during one's adolescence and young adulthood, followed by a period of relative stability in mid-adulthood. Novelty and the distinctiveness of the events experienced in this period lead to better encoding. Because of such characteristics these events are less likely to be affected by proactive interference. Further, stability after novelty facilitates spaced rehearsal and helps the cues to be more effective in reminding earlier events. According to this account, the critical element for the bump is not age of the person at the time of the event *per se*, but rather the experience of novel and distinctive events. Therefore, this model predicts a bump for other time periods in which such events are experienced. This prediction has been empirically supported; for instance, Schrauf and Rubin (1998) found that the bump in autobiographical memories changed as a function of an individual's age at migration to another country. Similarly, Conway and Haque (1999) reported a second bump for individuals who experienced a major political upheaval in their mid-adulthood.

The *narrative/identity account* (e.g. Holmes & Conway, 1999), is based on the idea that adolescence and young adulthood are the most important periods for the formation of self-identity and self-narratives, since this is the time period when individuals are trying to figure out who they are emotionally, socially and politically. Thus, the experiences and events in this period are strongly encoded to the degree that they are relevant to self and long-term life goals (Conway & Pleydell-Pearce, 2000). Because of this privileged encoding and later rehearsal, they are better and more easily retrieved in later age. There has been some empirical support for this account as well. Holmes and Conway (1999) asked their participants to list important personal and public events that happened in their lifetime. On the basis of Erikson's (1950) theory of how self develops across the life span, Holmes and Conway argued that second decade of life is especially relevant for generation identity (Mannheim, 1952) when individuals are more likely to understand, pay attention and become part of the general social context they live in (e.g. social or political ideas and groups). In the third decade of life, which corresponds to intimacy versus isolation in Erikson's stages, the main issue is forming personal relationships with others. Therefore Holmes and Conway (1999) predicted and found that, in terms of distribution of memories, the peak of the reminiscence bump was in the second decade of life for public events and in the third decade of life for personal events. Similar findings have been obtained in other studies (e.g. Conway & Holmes, 2004).

Although both frameworks were able to account for the bump, more recent findings showed that the appearance of the bump depends on the emotional valence of the experiences. For instance, Berntsen and Rubin (2002) found that the bump appeared when people were asked for their happiest and most important memories but not when they were asked for their saddest and most traumatic memories. Moreover, Rubin and Berntsen (2003) found that there was a bump for the most in-love and most proud memories but not

for the most angry and most afraid memories. In addition, there was a clear bump for the positive most important memories but not for negative and mixed most important memories. Neither the cognitive account nor the narrative/identity account explain or make predictions regarding the effects of emotional valence on the bump, unless some other mechanisms are added to these accounts (Berntsen & Rubin, 2002).

Berntsen and Rubin (2002, 2004; see also Rubin & Berntsen, 2003) offered a new theoretical explanation of the bump, which assigned a central role to expectations about individuals' life courses in a given culture. The starting point for this alternative explanation was the concept of *life scripts*, which Berntsen and Rubin (2002) formulated on the basis of the concepts of *script* (Schank & Abelson, 1977) and that of *age norms* for significant transitional events in a culture (Neugarten, Moore, & Lowe, 1965; Settersen & Hagestad, 1996a). Life scripts can be considered cognitive schemas of people in a given culture regarding what transitional events a typical individual is likely to experience during the life course as well as the age at which these events are likely to be experienced.

According to this account, life scripts serve as guides for retrieval of autobiographical memories. When people are asked to remember extremely important or positive events, such cues trigger the life script; people start searching memories in the period that they believe they were the happiest or the period in which such memories would most likely have been experienced. There are two important axioms of this account: first, life scripts by their nature are more likely to consist of positive experiences, and second, a substantial portion of these positive events is expected to occur in adolescence and young adulthood. Thus, they argued that the bump appears for positive events but not for negative events because life scripts are very likely to be dominated by positive events which are considered likely to happen in youth, following a culturally expected schedule of the life course. A bump is not obtained for negative events (at least not to the same degree as positive events), because negative events are generally exceptions or deviations from the script. Berntsen and Rubin (2004) also argued that life scripts may cause the bump observed for recall of autobiographical memories in response to cue words. They suggested that the type of events that are culturally sanctioned are given more importance during encoding and therefore receive more rehearsal, and become more accessible in general.

Aspects of this account were supported empirically. As mentioned above, the bump was obtained for positive but not for negative events (Berntsen & Rubin, 2002). Berntsen and Rubin (2004) also showed both in their review of earlier work on age norms for significant events as well as in their own data that there were clear expectations about when certain events are likely to be experienced in a given culture. More importantly, there was more agreement on the timing of positive events than on negative events (i.e. smaller standard deviations in age estimates). Also, when they asked Danish participants between the ages of 20–94 (Rubin & Berntsen, 2003, Study II) their estimates about when a typical 70-year-old would experience his/her most important, most proud, most in-love, most jealous, most angry and most afraid memories, they found that (a) positive events were more likely to be placed in the period corresponding to the bump, (b) participants were more confident in their age estimates for the positive than for the negative events and (c) the standard deviations of the age estimates were smaller for positive than for the negative events, indicating a large degree of agreement as to when these events are expected to occur.

Similar data have been obtained in our laboratory (Tartar & Tekcan, 2006). We asked a large sample of Turkish individuals between the ages of 18 and 95 when a typical 100-year-old individual would have experienced his/her happiest, saddest, most in-love,

most important, most traumatic and most fearful events, and found a bump only for happiest, most important and most in-love memories. Finally, Berntsen and Rubin (2004) also provided independent evidence for the existence of life scripts. As noted by Berntsen and Rubin (2004) although several studies provided data regarding the age estimates for events that are thought to be transitional, these events were generally determined to be transitional or important by the researchers. They asked college students in Denmark to list seven most important events that a typical newborn (same gender as the participant) is likely to experience in his/her life. Participants were also asked to provide estimated prevalence of the event in the population, estimated age-at-event, importance and emotional valence. They found that there was a significant overlap of the events that were named by the participants; they were more likely to be positive events, the age estimates of the positive events were more likely to be in the period corresponding to the bump and the age estimates for positive events were less variable than those for the negative events. Thus this study showed that there were indeed culturally shared expectations about important events that members of a culture will experience, and that there was a specific age range in which these events were likely to be experienced.

The main purpose of the present study was to address the validity and the generality of the concept of life script. Below, we review the main questions we investigated:

- (1) The existing data on life scripts come from a single culture (Denmark). As Berntsen and Rubin (2004) and Rubin and Berntsen (2003) pointed out life scripts (both in terms of the events in such a script as well as the age estimates for these events) may differ depending on characteristics or collective experiences of cultures. Therefore, we attempted to determine the generality of the life script idea by providing data from a different culture and to test the main hypotheses of the life scripts: that it is dominated by positive events; that positive events are much more likely to be estimated to occur during late adolescence and early adulthood, and that a stronger agreement exists regarding the age-at-event for positive than for negative events. The Danish and Turkish cultures are quite different. One of the common ways of cross-cultural comparisons in psychology is to use Hofstede's (1980, 2003) dimensions (e.g. Hofstede, 1986; Triandis, Brislin, & Hui, 1988). On the four dimensions of power distance, individualism–collectivism, masculinity–femininity, and uncertainty avoidance, the Turkish and Danish cultures score radically differently; Turkey scores substantially higher on collectivism, power distance, masculinity, and uncertainty avoidance. Given the differences between the two cultures, the main questions were: (a) whether a life script, as defined by Berntsen and Rubin (2004) would emerge for the Turkish society and (b) whether and how the scripts for the two cultures would differ.
- (2) We investigated how the age of the target person affects the life script. To do this, we asked half of our participants to provide the life script, not for a newborn, but for a 90-year-old person. This manipulation was expected to serve a number of purposes. First, Berntsen and Rubin (2004) reported that very few of the events (8 out of 36) listed in the life script had average age estimates higher than 30, and since most of the 36 events in the list were positive, there clearly appeared to be a bump for these events. One possibility here is that asking participants to imagine the life script for a newborn created an anchor and led to the selection of the events that were closer to the first half of an imaginary life than the second half. More specifically, because participants start to think about the script from the very beginning (birth) and because they are less likely consider the other end of the spectrum (old age and death), they may tend to finish their

list of seven events by the time they come to middle age, especially given that life scripts are expected to be chronologically imagined and constructed (Berntsen & Rubin, 2004). Thus, the findings of Berntsen and Rubin might simply be a methodological artifact. If this is the case, asking participants to form a life script for a 90-year-old person might have the opposite effect, either because they may focus on later parts of life or they may have a more balanced focus across the life span leading to an even distribution of events. In either case, the bump for positive events should either flatten (or even disappear) or shift forward (to older ages). If however, the same or at least a similar distribution (with a bump only for positive events falling into adolescence/young adulthood) is obtained with this life script, then one can eliminate the methodological artifact explanation.

The second reason for this manipulation was to test one of the fundamental axioms of the life-script idea as construed by Berntsen and Rubin (2004): that it is dominated by positive events. We expected that the life script for a 90-year-old person would be less likely to be dominated by positive events, since it would likely include more deaths, illnesses etc. (if participants focused on later parts of life) or negative public events such as World War II or Turkey's War of Independence (if participants imagined the type of experiences that a 90-year-old person might have lived through). Therefore, obtaining a life script with a bump for positive but not for negative events and lower standard deviations for positive events than for negative events would show that dominance of positive events in a life script is not a necessary condition of life scripts and the bump.

Finally, a related aspect of this manipulation was to see exactly how the newborn and elderly scripts would differ. There are a number of possibilities in that regard. If imagining a 90-year-old person's life leads to a focus on the later part of life, then there should be more events from that part (illness, deaths of friends, grandchildren etc.) to the exclusion of events from the beginning of life. Another possibility is that there may be a real cohort effect such that the participants might have imagined what type of life a person who is 90 years old might have lived. In such a case, the life script would again start with the birth but may now include events such as wars etc. that these individuals must have lived through. These two possibilities lead to different predictions about the distributions of emotional memories. Related to this, the list of events as well as the age estimates would be affected depending on which of the two accounts held. For instance, some events such as college entrance examination would not be in the life script for a 90-year-old person, but there would be more mention of wars. Similarly, age-at-event for marriage and having children would be located at a later age in the life script for a newborn.

- (3) We used gender of the participant and of the target person (i.e. the person for whom the life script is constructed) to investigate the consistency of the life script. Berntsen and Rubin (2004, Study II) asked their participants to provide life scripts for a newborn of their own gender; however, they did not report any gender differences in the life scripts, presumably because of the substantially different sample sizes (16 men and 87 women). In their Study I, in which they asked age estimates for most emotional memories (e.g. happiest, saddest, most traumatic etc.), they found that only one of the age estimates (most traumatic) showed a statistically significant gender difference; all other gender differences were less than 1 year. Earlier work on age deadlines for several transitional events (e.g. Settersen & Hagestad, 1996a, 1996b) found a gender difference only for some of the events the authors considered to be important

transitional milestones; for instance, the expected age deadline for marriage was earlier for women (25.93) than for men (27.89), as was the case for entering full-time work (21.66 for women, 22.79 for men). Although statistically significant, these are small differences. They also noted that (1996a) the gender of the participants did not make a difference in the age estimates. Thus, previous work showed that the gender of the participant does not affect the age estimates, and gender of the target person yields quite small differences. In the present research, we wanted to see whether gender makes a difference in terms of what constitutes a typical life (i.e. which events are included in the life script) and their emotional valence as well as the age estimates. Therefore in the present study, we asked our participants to provide the life script for an individual of the same gender as well as an individual of the opposite gender (manipulated within-subjects).

## METHOD

### Participants

Two hundred and twenty Boğaziçi University students participated in this study in exchange for extra credit towards their course grades in psychology courses. Data from 20 participants were eliminated from the analyses, either because they failed to comply with the instructions or they did not provide most of the ratings. The participants in the final sample (114 women, 86 men) ranged in age from 18 to 34 ( $M = 20.08$ ,  $SD = 2.07$ ).

### Questionnaires and procedure

The original questionnaire used by Berntsen and Rubin (2004) was translated into Turkish, and was tested in a pilot study for comprehensibility of the questions. This questionnaire asked individuals to list the seven most important events likely to be experienced by a newborn of the same gender as the participant. The participants were informed that this should not be a specific baby (such as one's own), but a generic baby. After the participants listed the seven events, they provided four ratings for each of the events they listed: (a) they rated the prevalence of the event by estimating the percentage of people who will experience this event at least once during their lifetime, (b) they rated the importance of the event on a scale from 1 = unimportant to 7 = extremely important, (c) they provided an estimate about when (at what age) this event is expected to happen and (d) they rated the degree to which this event is negative or positive (from  $-3$  = very negative to  $+3$  = very positive). We also asked participants, just like Berntsen and Rubin (2004), to list all the emotions the event engendered, but the resulting data were almost impossible to analyse; therefore, we do not discuss this aspect any further. In the present study we refer to this questionnaire as the 'newborn questionnaire'. We also constructed a modified questionnaire, the only difference being that the participants were asked to provide a life script for a 90-year-old person. We call this the 'elderly questionnaire'.

Half of the participants ( $n = 110$ ) were given the 'newborn questionnaire' and the other half the 'elderly questionnaire'. Because data from 20 participants had to be eliminated, the final data were based on 95 participants (59 women, 36 men) for the 'newborn questionnaire' and 105 participants (55 women, 50 men) for the 'elderly questionnaire'.



Participants receiving the newborn questionnaire filled it out twice, once for a newborn of their *own gender* and once for the *opposite gender*. Participants receiving the elderly questionnaire did the same. Therefore, one of the manipulations (life script for a newborn vs. life script for a 90-year-old person) was a between-subjects manipulation, and the other (own gender vs. opposite gender) was a within-subjects manipulation. The order of own gender vs. opposite gender questionnaires was counterbalanced across subjects so that own gender and opposite gender versions were approximately equally presented first and second. Participants were tested in groups of 20–25. Demographic information (date of birth, gender, marital status, education and occupation) were also collected from each participant.

## RESULTS

The events listed by the participants were categorised by the authors. This was relatively straightforward, since there was high overlap between the events and descriptions given by the participants. In ambiguous cases, categorisation was determined by discussion among the authors. We also consulted the categorisation scheme used by Berntsen and Rubin (2004, Study II). We attempted to remain loyal to the participants' own naming of the events. Therefore, sometimes events appearing to be very similar were not collapsed. For instance, 'college' and 'college entrance exam' are separate categories, because the participants mentioned them as such; the former refers to being a student at a university, and the latter refers to the very competitive national college entrance examination. Moreover, the emotional valence of these events was also different, which also lent support to the validity of the categorisation. 'Accident/injury' vs. 'traffic accidents', and different classes of 'death' are separate categories for similar reasons.

### Is there a life script for the Turkish society?

First, we look at the life script obtained for this sample and then compare it to the data from the Danish sample obtained by Berntsen and Rubin (2004) using the same methodology and measurements. The comparisons in this first section are based on the life script for a 'newborn of the same gender' in our study, which is the directly comparable component to Berntsen and Rubin (2004).

The events listed by more than three participants (Berntsen & Rubin, 2004) are given in Table 1. There were 27 events, with a few very high frequency ones. The number of events and the frequencies with which they were mentioned suggest that there is a life script for the Turkish sample. Moreover, just like for the Danish sample of Berntsen and Rubin (2004), most events are what can be called socially significant or transitional events; there were very few events that were biological in nature: begin walking, begin talking, puberty, deaths.

Other aspects of the data were also in line with the idea of life script as formulated by Berntsen and Rubin (2004). First of all, 16 of the 27 events, and 7 of the top 10 events were positive (valence > 0; the mean valence of the top 10 events was 1.42, with a standard deviation of 1.03). Second, there was more agreement on the estimated age-at-event for positive than negative events; standard deviation of age-at-event estimates was lower for positive events ( $M = 2.00$ ,  $Mdn = 2.00$ ) than for negative events ( $M = 8.82$  and  $Mdn = 6.35$ ).

Table 1. Events listed in the life script for a newborn (same gender as the participant), along with means and standard deviations of frequency of mention, estimated prevalence, importance, age-at-event and valence

Event	Frequency of mention	Prevalence		Importance		Age-at-event		Valence	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Marriage	73	85.82	10.92	6.14	1.13	26.21	2.24	1.99	0.82
Begin school	72	92.54	8.95	6.35	0.72	6.83	0.38	1.77	1.17
Have children	51	74.94	13.86	6.59	0.92	28.88	2.78	2.55	0.64
First job	43	77.09	16.64	6.30	0.71	23.93	1.94	1.51	1.24
Fall in love	39	81.29	20.04	6.11	0.76	14.63	3.62	1.92	1.00
College	38	52.73	23.70	6.53	0.73	19.70	2.22	2.30	0.91
College entr. exam	25	70.48	22.31	6.40	0.65	17.64	0.49	-0.08	1.71
Own death	17	100.00	00.00	6.31	1.14	71.13	5.71	-1.50	1.41
Others' death	17	84.53	23.30	6.35	0.93	24.53	14.37	-2.82	0.39
Puberty	16	96.06	9.96	6.50	0.63	13.13	1.15	0.06	1.65
Circumcision	15	83.47	22.79	5.60	1.40	5.87	2.90	0.53	1.68
Begin talking	14	98.38	2.87	5.85	2.23	1.77	0.56	2.46	0.88
Begin walking	12	97.75	5.77	6.42	0.79	1.25	0.40	2.25	0.87
Military service	11	96.36	4.67	5.55	1.21	22.91	2.07	0.91	1.59
Retirement	10	64.50	23.03	5.60	0.52	56.20	5.83	0.70	1.49
Begin high school	9	80.00	10.90	6.22	0.83	15.00	0.76	1.78	1.30
Divorce	8	32.86	17.99	5.86	0.69	33.57	4.76	-2.00	1.00
Parents' death	7	85.83	20.10	6.83	0.41	42.50	6.89	-2.50	0.55
Accident/Injury	7	63.29	35.97	4.86	1.07	12.00	12.42	-2.14	0.69
Getting into fights	7	70.83	19.08	4.83	0.98	10.50	3.83	-1.50	1.05
Family quarrels	6	83.17	19.50	4.83	1.33	11.33	6.35	-1.50	1.52
Begin daycare	6	63.33	31.41	6.17	1.17	3.83	1.83	1.33	1.21
High school exam	6	78.33	16.33	5.67	0.52	14.50	0.84	0.67	2.16
Traffic accident	5	35.00	33.76	6.00	0.63	22.67	5.75	-2.83	0.41
Illness	5	86.00	21.04	6.00	0.70	27.40	27.86	-2.60	0.55
Sibling birth	6	65.00	21.45	6.33	0.82	6.50	2.51	1.33	1.21
Move	4	69.00	6.37	6.00	0.82	19.00	8.60	-1.25	0.58

Finally, the distribution of age-at-event estimates for positive, negative, and neutral events are presented in Figure 1. There was a substantial bump for the positive events in the 3rd decade of life. There was no bump for the neutral events, and a very small bump for the negative events in the 2nd decade of life. When we looked at the negative events that fell into that decade, we found that of the 43 events listed by the participants, 10 were the same event: the college entrance examination, which is a central examination that more than one million high school graduates take every year, and the score on that exam is the only determinant of whether one gets into a university and if so which one. Only approximately 10–15% of the candidates are placed in college undergraduate programs; therefore the exam is perceived as a rather negative event. When we removed this event, the slight bump disappeared.

#### *Comparison of the Danish and Turkish life scripts*

There was a high degree of overlap in the events listed in both studies; among the 27 in the present study and the 36 in Berntsen and Rubin (2004), 17 events were common. Moreover, 6 of the top 10 events were the same; and of the remaining 4, 2 were events that could not



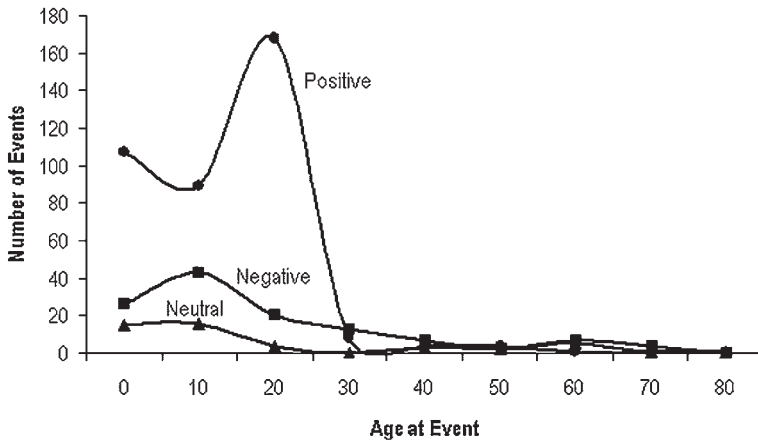


Figure 1. Distribution of age estimates for positive, negative and neutral events (newborn life script)

have been in the Danish life script: the college entrance exam and circumcision of boys. Finally, the top three events were identical (marriage, having children and beginning school), with a different order (having children was first in Berntsen and Rubin but third in ours). The strong positive correlation [ $r(15) = 0.85$ ,  $p < 0.01$ ] between the frequencies of the events common in both lists clearly shows the similarity of the scripts across the two cultures.

There were also some obvious and meaningful differences. First, our participants listed circumcision and military service in the male life script (ranked 10th and 14th, respectively). Just as these events were not found in the Danish life script, confirmation and baptism did not turn out to be part of the Turkish life script, 99% of which is Muslim. 'Leaving home' was much more frequently reported by the Danish sample (ranked 8th) than by the Turkish sample (ranked 30th). Moreover, it was rated as a positive experience by the Danish sample ( $M = 1.12$ ), but negative by the Turkish sample ( $M = -1.00$ ). Similarly, 'first sexual experience' was mentioned more frequently by the Danish sample (ranked 24th) than by the Turkish sample (ranked 33rd). Also, the estimated age-at-event for first sexual experience was much younger for the Danish sample ( $M = 16.00$ ) than for the Turkish sample ( $M = 22.5$ ).

Overall, these findings generally suggest that there is some universality to life scripts as indicated by the high overlap of events for Danish and Turkish cultures, with minor but culturally meaningful differences suggesting that specifics of life script may change across cultures.

### Life script for an elderly (90-year-old) individual

In this section we present data regarding the life script for an elderly person. The findings in the section are also based on the 'same gender' life scripts to better exploit the comparisons with the newborn questionnaire. The events in the elderly script are presented in Table 2. There was a high overlap among individuals about the expected events in a 90-year-old person's life. In addition, standard deviations of age-at-event estimates for the negative events were higher than that for the positive events; means were 11.93 for negative events

Table 2. Events listed in the life script for an elderly (same gender as the participant) along with frequency of mention, estimated prevalence, importance, age-at-event and valence

Event	Frequency of mention	Prevalence		Importance		Age-at-event		Valence	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Marriage	86	84.82	13.29	6.06	0.84	24.32	4.86	1.88	0.96
Have children	80	80.51	14.89	6.60	0.56	26.28	4.82	2.64	0.48
Have grandchildren	37	66.33	17.61	6.19	0.71	55.08	7.61	2.72	0.45
First job	28	73.00	27.06	6.14	1.08	24.61	3.62	1.82	1.19
Fall in love	28	80.44	21.58	6.37	0.79	16.33	3.11	2.19	0.83
Parents' death	27	82.70	22.45	6.70	0.61	44.65	13.90	-2.70	0.54
Begin school	25	89.68	9.29	6.32	0.95	6.92	0.40	1.80	1.22
Spouse's death	24	61.79	16.58	6.67	0.76	71.00	9.44	-2.96	0.20
College	23	52.39	21.15	6.22	0.67	21.04	2.57	1.96	0.93
Others' death	23	83.00	23.10	6.55	0.60	41.18	17.78	-2.68	0.48
Illness	20	67.15	31.19	6.05	0.76	55.70	20.04	-2.15	0.99
Military service	19	88.94	16.70	5.39	1.58	21.28	2.65	0.78	1.11
Child's marriage	18	68.06	18.56	6.22	0.65	51.22	5.71	2.33	1.41
Acquiring property	18	51.50	23.69	5.44	0.98	38.33	10.59	2.28	0.67
Infidelity	12	44.09	19.47	5.64	0.92	32.91	8.12	-1.82	1.17
Retirement	12	61.58	24.03	5.83	0.94	58.58	5.26	1.17	1.85
Move	10	60.20	26.44	4.90	1.19	32.30	17.65	-0.20	0.63
Career	10	43.50	26.88	5.80	0.63	34.70	10.03	2.30	0.48
Failure in career	9	55.22	17.69	5.22	1.20	30.44	5.59	-2.00	0.70
Accident/Injury	8	31.86	31.95	5.29	1.80	24.29	10.32	-2.00	0.82
Traffic accident	8	42.38	31.62	5.75	0.70	34.38	16.36	-2.87	0.35
Circumcision	7	96.57	4.54	4.86	1.07	8.14	1.77	1.29	1.11
Own death	7	100.00	00.00	4.57	2.82	87.43	5.09	0.15	1.77
Child's college grad.	7	62.14	11.50	6.14	1.07	41.00	10.60	2.71	0.49
Physical aggression	7	72.14	28.56	6.29	0.95	15.86	8.09	-2.57	0.53
Child's death	7	28.86	11.87	6.43	0.79	41.14	26.05	-2.86	0.38
Psychol. problems	6	80.83	32.47	6.00	1.26	35.50	26.63	-1.00	1.79
Arranged marriage	6	48.00	23.61	3.60	2.41	20.00	3.67	-1.60	1.52
War	6	62.50	37.65	6.67	0.52	15.00	7.48	-2.17	0.98
Puberty	5	99.20	0.84	6.40	0.55	12.60	0.55	1.00	0.70
Family quarrels	5	88.00	10.95	5.80	0.84	23.40	7.06	-1.60	0.89
Leave home	5	69.00	22.59	6.00	0.70	33.60	19.87	0.20	2.28
Operation	5	77.00	17.89	5.80	1.10	57.40	14.79	-1.60	1.14
Financial hardship	5	69.00	12.45	5.80	1.10	24.60	2.07	-1.00	1.73
Divorce	4	47.50	17.08	6.25	0.96	41.00	4.83	-2.25	0.50
Getting into a fight	4	72.50	22.17	4.75	1.89	18.50	6.81	-1.50	0.58
First sexual experien.	4	91.00	8.21	5.75	1.26	20.00	1.63	2.00	1.41
Neglected by children	4	68.75	30.65	6.50	1.00	60.00	8.16	-2.50	1.00
High school	4	82.50	16.58	5.00	1.63	17.75	1.50	1.25	0.96

and 5.38 for positive events (medians were 9.44 and 4.82, respectively). Figure 2 shows the distribution of age-at-event estimates for the positive, negative and neutral events; there is a clear bump only for the positive events but not for negative and neutral events. Thus, a life script with characteristics suggested by Berntsen and Rubin (2004) emerged for the elderly as well.

Comparatively, there was also a substantial overlap between the newborn and elderly life scripts; 7 of the top 10 events in both scripts were the same. Two differences between the

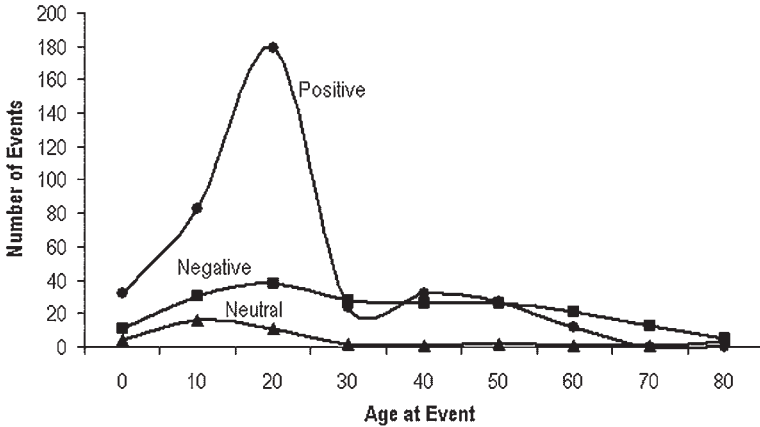


Figure 2. Distribution of age estimates for positive, negative and neutral events (elderly life script)

newborn and elderly scripts should be mentioned. One was that there were more events (39) in the elderly script than in the newborn script (27). The other was that of the 39 events, 20 were rated negative by the participants (11 out of 27 in the newborn questionnaire).

One of the issues we raised was whether the bump for positive events obtained by Berntsen and Rubin (2004) could have been due to asking for a life script for a newborn, which might have biased participants toward selecting events from early in life, since it has been shown that people construct such a life script chronologically. Figure 3 depicts the distribution of age-at-event estimates for all events (regardless of emotional valence) for the two scripts (newborn vs. elderly). It can be seen that for whom the script was provided made a difference in the distribution, except the bump period. Those responding to the newborn questionnaire reported higher proportion (45%) of events from the first two decades of life compared to those responding to the elderly questionnaire (24%), with the difference being highest for the first decade (22.60% vs. 6.40%). On the other hand,

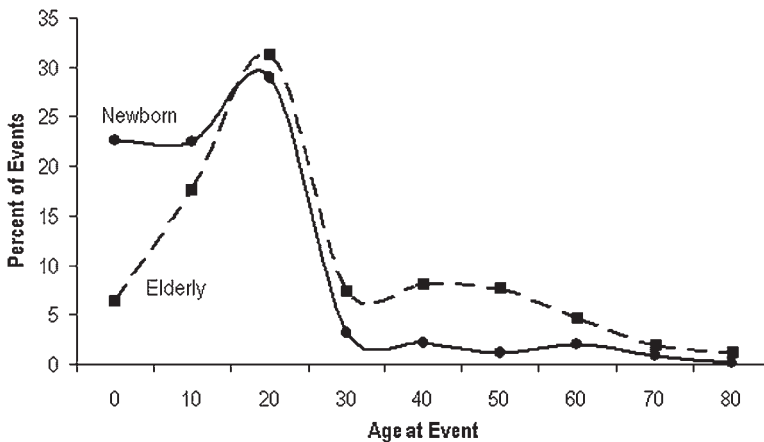


Figure 3. Distribution of age estimates for all events in the newborn and the elderly life scripts

participants responding to the elderly questionnaire reported more events from the 4th, 5th, 6th and 7th decades of life (27.5%) than those responding to the newborn questionnaire (8.5%). Despite these differences, there was basically no difference between the groups in terms of the proportion of events dated to the bump period (28.90% for the newborn and 31.20% for the elderly). This shows that the tendency to assign positive events to young adulthood is a robust phenomenon that remains uninfluenced by the type of life script that is imagined.

### Gender differences in the life script

First, we addressed whether the life script for men and women would differ; they did not. In the newborn script, 7 of the top 10 events for men and women were the same; moreover, of the remaining 3, the script for men included 'circumcision' and the script for women included 'puberty', which could be considered comparable as major transitions in terms of gender identity. In the elderly script, again 7 of the top 10 events for men and women were the same, and the first two were identical ('marriage', 'having children').

Second, if a life script exists for individuals in a culture at a given time, it should basically be the same in the minds of men and women living in that culture (i.e. participant gender should not affect the life scripts). Therefore, we also investigated the consistency of life scripts provided by men and women. For the newborn questionnaire, 8 of the 10 events were the same in the men's script for men and women's script for men. It should be mentioned that the two different events were ranked 9th and 10th, indicating that the first eight events were identical. Age-at-event and emotional valence for the events were also very similar across participants' gender. The largest difference in estimated age-at-event was for 'having children'; men estimated men to have children 2 years later than women estimated men to do so. All other differences were less than 1 year. In terms of emotional valence, the largest difference was 0.8 for 'first job'; women estimated men's first job to be more positive ( $M = 2.00$ ) than men estimated it to be ( $M = 1.2$ ). A similar pattern was observed for the women's script for women and men's script for women; 9 out of 10 events were common between these life scripts. The largest difference in age-at-event was in 'falling in love' with a mean age estimate of 12.9 by men and 14.5 by women. In terms of emotional valence, the largest difference was in 'puberty'; men considered puberty for women to be more pleasant ( $M = 1.00$ ) than women thought it to be ( $M = 0.06$ ).

Effects of participant gender on the elderly life script were similar. Seven of the top ten events in the men's life script for men and women's life script for men were identical. Similarly, 9 of the top 10 events in the women's life script for women and men's life script for women were identical. Moreover, in both cases, age-at-event and emotional valence for these common events were very similar. In the script for men, the largest expected age difference was 1.3 years; women expected men to fall in love at a later age ( $M = 17.8$ ) than men expected themselves to do so ( $M = 16.5$ ). The largest difference in valence was 0.6 points (on the 7-point scale); women expected university education to be more positive for men ( $M = 2.2$ ) than men expected it to be for their own gender ( $M = 1.6$ ). In the life script for women, the expected age and valence differences were again minimal. For age-at-event, the largest age differences (1.4 years in both cases) were for 'falling in love' and 'having children'; women expected women to fall in love at a later age ( $M = 16.1$ ) than men expected them to do so ( $M = 14.6$ ) and women expected women to have children at an earlier age ( $M = 24.6$ ) than men expected women to do so ( $M = 26.0$ ). The largest valence difference was 0.7 points for 'first job' and 'college'; women expected

both of these to be more positive events for women ( $M_s = 2.3$  and  $2.3$ , respectively) than men expected them to be for women ( $M_s = 1.7$  and  $1.6$ , respectively). Overall, these findings suggest that gender of the participants does not influence the life script.

The distribution of age-at-event estimates for positive, negative and neutral events as a function of participant and target gender revealed a remarkable consistency in both the newborn and elderly life scripts. In all four combinations of participant and target gender (e.g. men's script for men, men's script for women etc.) there was a large bump corresponding to the third decade of life for positive events. The percentage of positive memories in that period was very high, ranging from 28 to 30% in the newborn questionnaire and from 29 to 41% in the elderly questionnaire.

### Relationship between event frequency and output order

One of the predictions of the life script account is that there should be a correlation between the order in which the participants list the events and the age-at-event estimates for these events; if there is a cognitive structure regarding a typical life, it is expected that the participants will think about and list the events chronologically. Berntsen and Rubin (2004) found a positive correlation (0.55) between these two variables. To look at this relationship, we calculated the correlation between the order in which the event was mentioned and the estimated age for that event for each individual. There were strong positive correlations for both life scripts;  $r(93) = 0.81$ ,  $p < 0.001$  for the newborn life script and  $r(103) = 0.64$ ,  $p < 0.001$  for the elderly life script. Ninety of the 95 correlations for the newborn script and 93 of the 105 correlations for the elderly script were positive. Thus, it seems that for both life scripts people tended to start with earlier events in the life span and continue chronologically.

## DISCUSSION

This study showed that a life script—cultural expectations about a typical life—exists for the Turkish culture. This script consisted of more positive than negative events, with stronger agreement about the timing of positive events than of negative events. Moreover, most of the positive but not negative or neutral events were estimated to occur during young adulthood (in one's 20s), constituting a bump for that period. These findings generally replicate the only other study on life scripts regarding autobiographical memory within a different culture.

One important implication of the present study is the cross-cultural similarity of life scripts. There was high correspondence between the list of events put into the life script for the Danish (Berntsen & Rubin, 2004) and Turkish cultures, two cultures that are quite different on several dimensions (e.g. Hofstede, 1980).

Within that context of robust similarity in life scripts across cultures, some differences also emerged. Some events (circumcision and military service for Turkey, and confirmation and baptism for Denmark) were culture-specific and were not listed in the other country's script at all. Circumcision of boys is part of the Muslim religion and culture, and military service for men in Turkey is compulsory; therefore both of these socially significant events are part of a typical Turkish man's life.

Meaningful and more subtle differences in frequency of mention, age-at-event estimates and emotional valence for a few events were also observed. 'Leaving home' was mentioned

more frequently and as a positive experience in the Danish life script whereas it was listed less frequently and as a negative experience in the Turkish culture. Also, 'first sexual experience' was mentioned more frequently in the Danish life script and the estimated age-at-event was 6 years younger than the Turkish sample. Sunar and Fişek (2005, p. 170) noted that although Turkish society is becoming more 'modern, urban, industrial and egalitarian...it can still be characterised as traditional, authoritarian and patriarchal' in the arena of interpersonal—especially gender and family—relations. The Turkish culture is considered to be a more collectivistic culture than Denmark (Hofstede, 1980), or as Kağıtçıbaşı (1996) argued it is 'a culture of relatedness'. This implies mutual dependence among the family members where group loyalty and within-group happiness and harmony are given priority (Ataca, 2006; Sunar & Fişek, 2005). Within that context of relatedness, it is common for college students or single young adults (employed or not) to live with their parents until they themselves form a family (Baştuğ̃, 2002). Given all this emphasis on family unit and the practices it is associated with, leaving home is not necessarily something that is seen as a step towards adulthood, neither is it particularly encouraged by the parents. Instead, it can be seen as a significant challenge for both the child and parents since it is a radical shift from living in a close-knit family environment (both physically and emotionally). Moreover, since leaving home is, in most cases not voluntary (because of going to college in another city etc.) it is not surprising that it is seen as a negative experience.

In the Turkish culture, 'first sexual experience' has always been, and still is to some degree, associated with marriage, especially for women. Virginity at the time of marriage, can be highly important; since it can be seen as a sign of honour ('namus') for the women. Violation of that honour is considered to damage the honour, not only of the woman herself, but the whole family, and even the neighbourhood (Baştuğ̃, 2002). Although dating and cohabitation without marriage is becoming more common in urban areas and among the middle and upper classes, first sexual experience on the whole is still something that is expected to occur during early adulthood. Efe (2004) for instance found that 24% of a sample of college students had had a sexual relationship by the time they entered college; and among this group, for 67% the age at the time of the relationship was 18 or older. Thus, it is meaningful that the estimated age-at-event for first sexual relationship in Turkey compared to Denmark is (a) older and (b) closer to the estimated age for marriage.

The findings from both the newborn and elderly scripts seemed to challenge the dominance of positive events as a fundamental axiom of the life script hypothesis in autobiographical memory distribution. In the present study the life script for the Turkish culture may seem more pessimistic than that for Danish culture (42% vs. 28% of the events in the newborn script were negative, respectively). Similarly, 51% of the events in our elderly life script were negative. At first sight, our finding that both newborn and elderly scripts showed a clear bump only for positive events suggests that dominance of positive events in the life script is not a prerequisite for explanation of the bump. However, it seems that the appearance of a more negative life script for the Turkish culture resulted from a higher number of low frequency events that were negative. In the newborn script, 8 of the 11 negative events were those ranked 17th or lower (with frequency of mention of 7 or less). In the elderly questionnaire, although negative events were more evenly distributed (of the 20 negative events 8 were in the top 50% and the remaining 12 in the bottom 50% of the events), negative events still tended to be lower in frequency of mention; 11 of 20 negative events were those ranked 26th or lower (with frequency of mention of 7 or less). Although one could still be justified in concluding that the Turkish life script is more



negative, what determines the distribution of age estimates for events seem to be more influenced by the emotional valence of the high frequency events. Therefore, rather than a general dominance of positive events in the life script, what is crucial is the valence of the most frequently mentioned events. Indeed, it could also be pointed out that the idea of life script implies a high degree of agreement over events (i.e. high frequency of mention), and that only high frequency events should be considered as part of the life scripts. Data from a culture or a cohort where most frequently mentioned events tended to be negative events would provide an excellent testing ground for this axiom of the life script account.

We found no gender differences; gender of neither the participant nor the target person had a major effect on the life scripts (events, the variability of the age estimates, and the distribution of age estimates of positive, negative and neutral events). This finding is in line with earlier work on age deadlines for family (Settersen & Hagestad, 1996a) and educational and work transitions (Settersen & Hagestad, 1996b) and shows that the nature of the events typically expected for an individual are roughly the same. These findings, especially the lack of an effect of participant gender, support the idea that life scripts are cognitive schemata that are well established in the minds of the individuals in society.

We believe that the most interesting set of findings came from the elderly life script. First of all, this script was substantially different from that for a newborn in terms of the events listed; this finding suggests that people take into account cohort factors when considering a life script (Rubin & Berntsen, 2003). Another important difference was that age of the person for whom the participants constructed a life script created an anchor in framing their estimates of the events. As Figure 3 clearly shows, those who imagined a life script for a newborn provided many more events from the first 10 years of life than those who imagined a life script for the elderly, who in turn, provided a higher proportion of events from middle adulthood to old age (30s to 70s). Although there are methodological implications of this difference, what is more interesting is that this difference did not extend to the bump period. Although pre-bump and post-bump periods differed between the two questionnaires, the proportion of events assigned to the 3rd decade of life was virtually identical. This provides solid support for the special status of this period in regard to positive emotional experiences. It is important obviously that this relative immunity of the bump should be further investigated with other cohort manipulations or cross-cultural factors.

What does this distribution in Figure 3 imply about how the life scripts are constructed? First of all, high positive correlation between output order and age-at-event for both newborn and elderly scripts indicates that participants followed a forward chronological order, starting with earlier events and moving towards later events. Therefore, it is clear that participants did not start with later events in the elderly script. This, however, does not mean that they did not focus more on the later parts of life in the elderly script compared to the newborn script. Indeed, evidence suggests that they did. As seen in Figure 3, there were more events coming from the 4th through the 8th decades of life in the elderly script compared to the newborn script. Moreover, the mean of the estimated age-at-event for events listed only in the elderly scripts was 44.5, whereas that for events listed only in the newborn script was 9.9. These findings along with the lower correlation in the elderly script between output order and age-at-event and presence of a robust bump in the elderly script suggest the possibility that participants tended to start the elderly life script with events in adolescence rather than birth. Another observation is that there was no difference between the newborn and elderly scripts in the proportion of events in the last two decades of the imaginary 90-year-old person's life (70s and 80s).

The high degree of similarity in life scripts along with other data showing cross-cultural uniformity in the retrieval distribution of autobiographical memories (e.g. Conway et al., 2005) are significant given that the life scripts are argued to play a significant role in the retrieval of autobiographical memories, at least the ones with emotional valence (Berntsen & Rubin, 2004; Rubin & Berntsen, 2003). This makes cross-cultural or cohort comparisons of life scripts with distribution of emotion-cued and word-cued autobiographical memories a very promising line of inquiry on which little data exist (Conway et al., 2005; Rubin & Berntsen, 2003).

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