

Chapter 6

How Memory for Stressful Events Affects Identity

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6-1. Autobiographical memory and the bump

If one part of a person's self, or identity, is the collection of autobiographical memories her or she can remember, it makes sense to ask the following two questions about the role of memories for stressful events. First, what kinds of memories for emotional and important events do people usually have about themselves, especially for the years that one would consider most central to identity formation? Second, what happens if some of those memories for emotional or important events are about especially stressful events? We start with some recent work asking about important and emotional memories in order to answer the first question and then look at other recent work examining the effects of making a stressful memory central to your identity for the second question.

When adults over 50 are asked to produce autobiographical memories, that is, memories for specific events that occurred to them, three components describe the resulting distribution of autobiographical memories over the lifespan. The first is normal forgetting, which results in fewer memories being recalled as the retention interval increases. The second is childhood amnesia, which is the relative rarity of memories from before age 8. The third is an increase in the number of memories from ages 15 to 30 (Rubin, Wetzler, & Nebes, 1986). This increase has no single simple explanation, and so it is named *the bump* after its shape when the

proportion of memories is plotted against age as it is for important memories in Figure 1. The bump occurs when the autobiographical memories are cued by words, and even for important events from history (Schuman, Akiyama, & Knäuper, 1998), but it is most pronounced when people are asked to recall important events from their own lives.

Cuing with words results in many recent memories, with about half the memories coming from the most recent year. In contrast, older adults report few memories for important events after age 40. Thus, the bump is clearer when people are asked to recall a narrative of important events from their lives, even when the individuals are 100 years old (Fromholt, Mortensen, Torpdahl, Bender, Larsen, & Rubin, 2003), or when they were asked to list vivid memories or memories that would go into the book of their lives (Fitzgerald, 1996). The bump tends to occur at about the same time period in most studies, but can be affected by major life changes such as immigration that results in speaking a new language (Schrauf & Rubin, 2000). For a more complete review, see Rubin (1999, 2002).

6-2. Lifescript

Many theoretical explanations can account for the bump in word-cued autobiographical memories. However, the most plausible theoretical reason why the request to recall important memories shows such a clear bump is that people use their own life stories to search for important memories and most of these important events occur between the ages of 10 and 30 when much of identity is being formed (Conway, 2005 ; Conway & Pleydell-Pearce, 2000). We asked people to recall extremely emotional events (Berntsen & Rubin, 2002 ; Rubin & Berntsen, 2003). For positive emotional events, such as most happy, most proud, and most in love, we observed a clear bump in people over 40 as is shown by the memory for the happiest event in Figure 1. However, for negative emotional events, such as most sad, most afraid, most traumatic, and most angry, we observed no bump as shown by the memory for the saddest event in Figure 1. The only negative emotion to show a bump was most jealous,

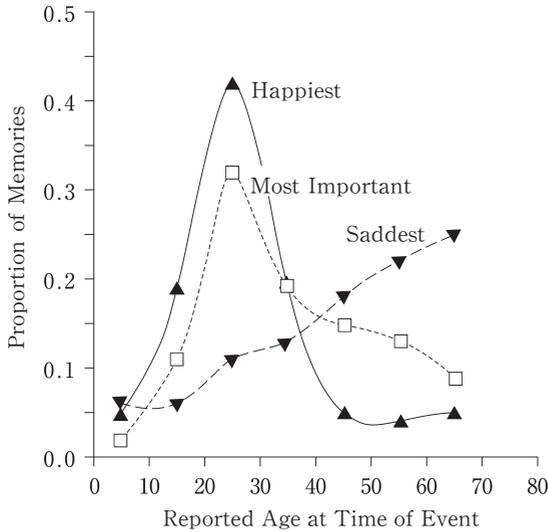


Figure 1. The distribution of the most sad, most happy, and most important memories for participants in their 60's from Berntsen & Rubin (2002).

which may be because jealousy usually involves love.

After considering many possible reasons for there being a difference in the distribution of memories caused by retrieving very positive and negative emotional events (Berntsen & Rubin, 2002, 2004 ; Rubin & Berntsen, 2003), we arrived at the following explanation, which turned out to fit the data quite well. We thought that when people searched

their own lives for important and highly emotional events they would be guided by a general idea of how life stories should be structured in their culture. We termed this basis for a normative life story, a *life script*—that is, culturally shared expectations as to the order and timing of life events in a prototypical life course. In cognitive psychology, scripts are schemata that consist of ordered sequences of actions or events, such as the routine actions that would constitute what one would do in going to a doctor's office, or eating at a restaurant, or serving tea in a traditional Japanese way.

Life scripts combine the concept of script as developed by Schank and Abelson (1977) with the idea of age stratification and culturally sanctioned age norms from research in anthropology and sociology (e. g., Neugarten, Moore, & Lowe, 1965). More formally, the notion of life scripts has the following six properties that derive directly from Schank and Abelson (1977). (1) A life script is semantic knowledge about expectations

in a given culture about life events, not a form of episodic memory for those events. (2) A life script is a series of temporally ordered events. (3) Life scripts can be described in terms of slots and their requirements. (4) The slots and their requirements for life scripts are culturally important transitional events and their culturally sanctioned timing. (5) Life scripts form a hierarchical arrangement with transitional events forming a higher order scene in which a series of subordinate actions or episodes are nested. (6) Life scripts are used to process life stories. The next four properties do not follow from Schank and Abelson. (7) Because life scripts represent a normative life course, life scripts are not extracted from personal actions in recurrent contexts, but are transmitted by tradition. (8) Life scripts do not represent an average life, but represent an idealized life in that many common and important events are left out. (9) Life scripts are distorted from actual lives to favor positive events. (10) Life scripts are distorted from actual lives to favor events expected to occur in the period covered by the bump.

Psychology concentrates on the individual person and so tends to overestimate the uniqueness of the individual as a causal agent (Wallach & Wallach, 1983). By shifting from each person's unique life story to a cultural life script, we claim that much of what we can recall as our own episodic autobiographical memory is determined by semantic memory norms that define what is important and when it occurs in our culture.

Our first attempt to test this idea was to give undergraduates the following task for each of the emotions we listed earlier: "Imagine an average 70 year old, who is looking back at his or her life, thinking about a range of different events. Your task is to give an estimate of this person's age at the time when each of these events took place" (Rubin & Berntsen, 2003). The data from this task fit the recall of 60 to 70-year olds quite well. Figure 2 shows the distribution of the undergraduates' responses to the same questions that the 60 to 70-year olds actually produced memories for in Figure 1. The fit to the other emotions was also quite good.

Encouraged by this, we asked how should we measure the life script

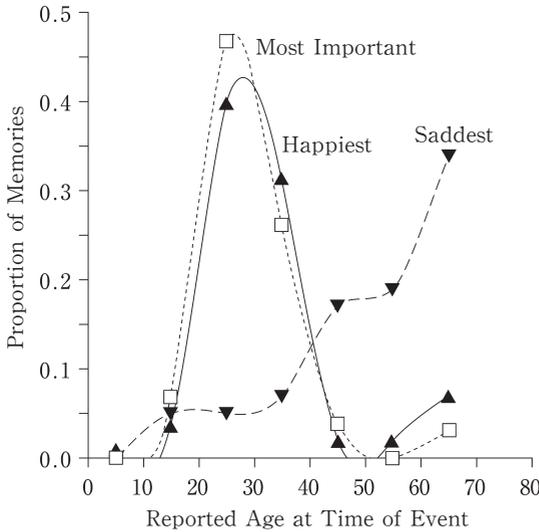


Figure 2. The distribution of the most sad, most happy, and most important memories for that undergraduates thought would occur for people who were 70 years old from Berntsen & Rubin (2002).

infant’s life.” We also asked how common the event is, how important it is, at what age it is expected to take place, and whether it was emotionally positive or negative (Berntsen & Rubin, 2004). Table 1 gives the important results for the ten most frequently mentioned events. The events are in general what you might expect, the age at the time of the event is often in the bump period, and the events are generally positive. A very interesting observation is that the two events that are very negative, other’s death and parent’s death, are both outside of the bump and both have much larger standard deviations in the age they are estimated to occur. In a script, actions or events have a known sequence in the order of the other events. Because the negative events do not have an agreed upon time of occurrence, they do not have a known sequence in the order of the other important events of life and do not really satisfy the requirements of being part of a script. Even a nominally positive event, such as having

itself and not just how it would guide the retrieval of emotional and important events? We gave undergraduates the following task. “Imagine a quite ordinary infant of your own gender. It cannot be a specific infant that you know, but should be a prototypical infant in our culture with a quite ordinary life course ahead. Your task is to write down the seven most important events that you imagine are highly likely to take place in this prototypical

Table 1. The Ten Most Frequently Mentioned Events with the Percentage of people mentioning them, Age at Event, and Emotional Valence of a Rating Scale of -3 to +3.

Event	% Listing	Age at Event		Emotion	
	Percent	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Having children	90	28.08	2.45	2.58	0.87
Marriage	75	26.90	3.11	2.52	0.77
Begin school	66	6.13	0.42	1.24	1.03
College etc.	54	22.05	3.86	1.30	0.97
Fall in love	50	16.33	5.26	2.44	0.89
Others' death	31	34.35	17.32	-2.56	0.98
Retirement	30	65.10	2.36	-0.06	0.81
Leave home	25	19.42	0.95	1.12	0.91
Parents' death	23	49.09	11.51	-2.46	1.25
First job	21	25.64	3.06	1.00	0.87

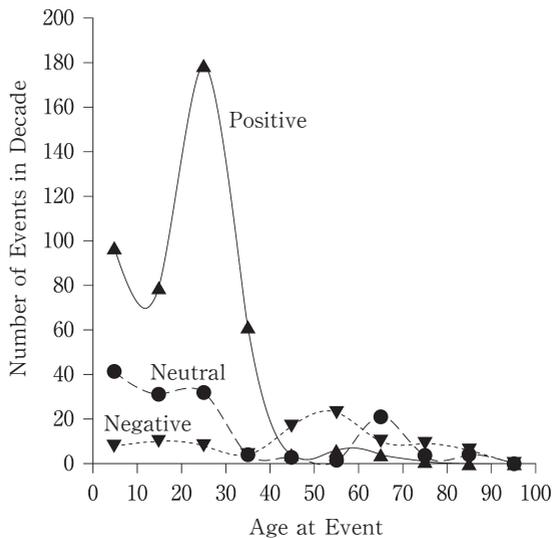


Figure 3. The distribution of age estimates for positive, negative, and neutral events by undergraduates from Berntsen & Rubin (2004).

children, can be negative if it occurs out of the scripted order. When we plot the occurrence of positive, negative, and neutral events generated for the life script, as we do in Figure 3, only positive events produce a bump.

Similar results have been found in Turkey (Erdogan, Baran, Alvar, Tas, & Tekcan, in press).

6-3. the Centrality of Event Scale : CES

Given that we expect positive events to be part of our cultural life script and thus our own life story, what happens when an extremely negative event becomes central to someone's life story. This may happen for a variety of reasons. For example, a severe car accident may leave a major mark on a person's life and therefore become a central part of this person's life story, even though car accident is not part of the cultural life script. To measure this we developed the Centrality of Event Scale, or CES, (Berntsen & Rubin, 2006b, 2007). It starts with the following instructions. "Please think back upon the most stressful or traumatic event in your life and answer the following questions in an honest and sincere way, by circling a number from 1 to 5." The scale is from 1 = totally disagree to 5 = totally agree with only the end values labeled. The seven items of the short form of the test are the following. 1. I feel that this event has become part of my identity. 2. This event has become a reference point for the way I understand myself and the world. 3. I feel that this event has become a central part of my life story. 4. This event has colored the way I think and feel about other experiences. 5. This event permanently changed my life. 6. I often think about the effects this event will have on my future. 7. This event was a turning point in my life. Thus, people who have high average scores have, unlike what is expected from the life script, made a negative event central to their life story and identity.

The life script serves as a way to organize and retrieve autobiographical memory. The events of the cultural life script that are included in an individual's life story are highly available (Tversky & Kahneman, 1973) and are generally assumed to become reference points for the organization of memories of less important events (Conway, 2005). They structure our life narratives by providing turning points and forming beginnings and ends of life time periods (e. g., Conway & Pleydell-Pearce, 2000 ;

McAdams, 2001 ; Robinson, 1992). They are observed to anchor and stabilize our conceptions of ourselves (Pillemer, 1998). However, a severe negative event that is outside the life script may play a similar role for the organization of a person's life story. If the usual positive memories of the life script are replaced with one or more negative stressful memories, we might expect mental health to suffer. As can be seen from the seven questions of the short version of the scale, the CES measures three related functions of such highly accessible personal memories : (1) the extent to which the trauma memory becomes a reference point for everyday inferences, (2) a turning point in the life story, and (3) a central component of personal identity. Thus, a memory of a traumatic or stressful event that is rated highly on the CES might take over some of the more positive functions of the life script events. It could provide a structure in which a negative rather than a positive memory is highly interconnected with other memories and other types of autobiographical information in an individual's cognitive networks.

Although this argument may seem obvious given the way we have introduced the concept, in many theories of posttraumatic stress disorder, the traumatic memory is not viewed as too connected to identity and life story. Rather, it is seen as poorly integrated into or dissociated from the rest of a person's life story and identity (e. g., Ehlers & Clark, 2000 ; Horowitz, 1986 ; see Dalgleish, 2004 for a review). Rather than removing the memory of the traumatic event from its highly central role as we are suggesting, these theorists see the role of therapy as changing the patient's life story to better integrate the memory of the trauma.

There are considerable data to support our view (see Berntsen & Rubin, 2006a, 2007), with correlations between measures of posttraumatic stress disorder symptom severity and the CES correlating between .4 and .5. However, the easiest way to demonstrate the effect is graphically. Figure 4 shows the relation between the CES and a standard measure of posttraumatic stress disorder, the Posttraumatic stress disorder Check List or PCL (Weathers, Litz, Huska, & Keane, 1994) and a standard measure of depression, the Beck Depression Index, or BDI (Beck, Ward,

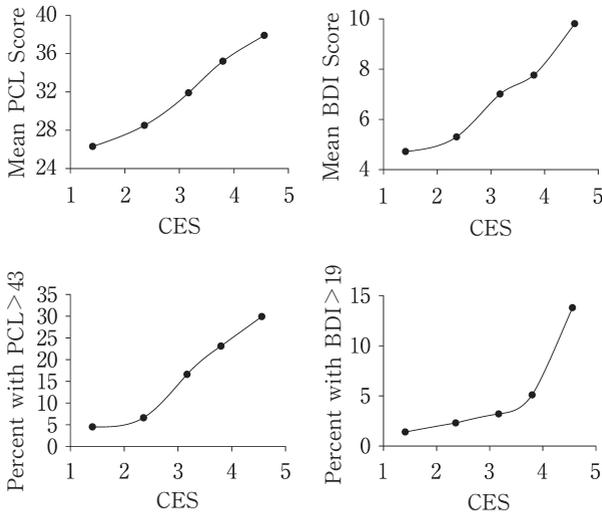


Figure 4. The top left panel shows the functional relation between the PCL test of PTSD symptoms and the CES, which was divided into quintiles. The bottom left panel shows the percentage of participants in each CES quintile with PCL scores above 43, an estimate of the cutoff for a diagnosis of PTSD. The top right panel shows the functional relation between the BDI and the CES. The bottom right panel shows the percentage of participants in each CES quintile with a BDI score above 19.

Mendelson, Mock, & Erbaugh, 1961). For the PCL scores above 43 are often taken as severe enough to be likely of producing a diagnosis of posttraumatic stress disorder if all other conditions are met, and a score of 20 on the BDI is often taken as sign that the individual may be depressed. We therefore also plotted the proportion of people above these levels as function of the CES. As can be seen, there are substantial increase in symptom severity as people make a stressful event more central to their identity and life story. The data are from a sample of 638 Duke undergraduates. We scored the CES as each person's average rating on the 5-point rating scale given earlier, and then ranked and put into quintiles the participants based on their CES scores for Figure 4.

6-4. Summary

In summary, when adults over 50 are asked to produce autobiographical memories, there is an increased frequency, or a bump, of memories from the period 15-30 years, relative to what would be expected from normal forgetting. When people are asked to produce memories for emotional events, memories for positive events show a bump, whereas most negative events do not. This effect can be explained as a result of cultural life scripts structuring how we recall past events. Cultural life scripts are culturally shared expectations of the timing of major life events. Studies on life scripts have shown that they over represent positive events in general and especially positive events expected in the period of the bump. Traumatic events are not part of cultural life scripts. They are exceptions from the norm, almost by definition. At the same time, memories for traumatic events may be highly central to the individual's life story and thus replace some of the structuring of the life story that is normally provided by life script events. In effect, an isolated, perhaps rare, highly negative event may color major parts of the life story and the identity of the person. This is likely to be detrimental to the person's well-being. Several studies have shown substantial positive correlations between the life story centrality of a negative event and PTSD symptoms. These findings challenge the widespread clinical view that a major cause of PTSD is an inability to integrate the traumatic memory into the life story.

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