

Does Everything Happen When You Are Young? Introducing the Youth Bias

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Abstract

The *reminiscence bump* refers to the disproportionate number of individuals' autobiographical memories which date from young adulthood. A similar bump is found in *cultural life scripts*: When people are asked to nominate and date major transitional events in a typical life course in their culture, a disproportionate number of the events cited are likewise expected to occur in young adulthood. Across two online studies, we tested whether these effects reflect a broader tendency to ascribe most important events to young adulthood. Specifically, we probed, in adult USA samples, for when individuals expect the most important public event of a typical person's life to take place. Although the occurrence of such public events should be randomly distributed across the lifespan, we found a bump in young adulthood. We found this bump in both *subjective* (Study 1; probing cultural expectations for the expected timing of the public event that a typical person considers to be the most important of their lifetime) and *objective* (Study 2; probing cultural expectations for the expected timing of the objectively most important public event of a typical person's lifetime) conditions. We term this set of cultural expectations the *youth bias* and discuss its implications for human cognition.

Keywords: autobiographical memory; collective memory; cultural life scripts; reminiscence bump; youth bias

Does Everything Happen When You Are Young? Introducing the Youth Bias

“May you stay forever young” is a famous Bob Dylan lyric from the song *Forever Young* (Dylan, 1974, tracks 6 & 7), suggesting that most important things happen during one’s youth. Consistent with this folk wisdom, several converging lines of evidence have been interpreted as evidence for the notion that young adulthood (e.g., ages 10 to 30) is a formative period in human development (e.g., Erikson, 1950). Perhaps the best-known finding to that effect is the *reminiscence bump* in autobiographical memory, whereby a disproportionate number of adults’ autobiographical memories date from this period (Rubin, Wetzler, & Nebes, 1986).

Notably, the reminiscence bump is not restricted to autobiographical memory: When asked to name important *public* events of recent history, individuals likewise often cite events which took place during their young adulthood (Holmes & Conway, 1999; Jennings & Zhang, 2005; Schuman & Scott, 1989). There are, however, many exceptions to this effect as well (for a review, see Koppel, 2013).

As the Dylan song noted above (1974, tracks 6 & 7) indicates, lay conceptions of human development over the lifespan reflect an awareness of the importance of this period. For instance, Rubin and Berntsen (2006) found that individuals younger than 25 years old reported feeling older than their age, while those older than 25 reported feeling younger than their age. This suggests that 25 is, in the authors’ parlance, an *attractor age*, to which everyone wishes they were closer.

The importance ascribed to young adulthood is likewise evident in research on *cultural life scripts* (Berntsen & Rubin, 2004). Cultural life scripts represent culturally shared representations of the order and timing of major transitional life events. They have most often been measured by asking participants to indicate the seven most important events which they consider

most likely to occur over the lifespan of a prototypical individual in their culture. Life scripts have been collected from, among other cultures, samples in Denmark (Berntsen & Rubin, 2004), Turkey (Erdoğan, Baran, Avlar, Taş, & Tekcan, 2008), and the United States (Rubin, Berntsen, & Hutson, 2009).

One salient finding to emerge from this literature is that, paralleling the temporal distribution of autobiographical memories, life scripts likewise feature a bump in young adulthood, as a disproportionate number of cited events are estimated to occur within this period (e.g., marriage). Berntsen and Rubin (2004) argue that the life script structures recall from autobiographical memory, and therefore that the bump in autobiographical memory is, at least in part, a function of the bump in the life script. For instance, the bump in autobiographical memory appears to track with the bump in life scripts. This is illustrated, for example, in Rubin and Berntsen (2003), who found a bump in both cultural scripts and autobiographical memory for positive events, but not, in either case, for negative events.

In the present investigation, we tested whether this schematized focus on young adulthood is limited to autobiographical events, or whether, instead, the bump in the cultural life script reflects a broader tendency to allocate most types of important events to one's youth. That is, just as the life script concerns the expected timing of the most important autobiographical events of a typical person's life, here, we probed for the expected timing of the most important public event of a typical person's life. The occurrence of important public events happens at all times and independently of the individual life course, even if the impact of such events on the individual is not equal across the lifespan. For instance, public events occurring in one's early adulthood tend to play an outsized role in shaping one's generational identity (Holmes & Conway, 1999; Schuman & Scott, 1989).

Nonetheless, on a purely rational or empirical basis, citations for the expected occurrence of the most important public event of a typical person's lifetime should be randomly distributed across the lifespan. We still expected, however, that just as life scripts feature a bump in young adulthood for private events, so too would participants in the current study disproportionately cite this age period in relation to public events. Were this the case, it would represent the establishment of a heretofore undiscovered cognitive bias, by which not only are the formative autobiographical events of a typical person's life expected to occur in young adulthood, but so are the most notable public events of a typical person's life. We term this phenomenon the *youth bias*.

Overview of the Current Studies

We tested for the existence of this normative youth bias across two online studies, conducted upon USA samples. Both studies probed for the expected timing of the most important public event of a typical person's life, with the specific phrasing of the query varying slightly across studies. We conducted two studies in order to test the robustness of the youth bias, that is, whether it held across different formulations of the relevant question.

Study 1

Method

Participants and procedure. Study 1 was conducted through a combination of Amazon's Mechanical Turk website (MTurk) and the SurveyMonkey website – in the latter case, the website recruited participants. The sample consisted of 200 participants. Table 1 illustrates pertinent demographic information.

Survey. In Study 1, we employed a *subjective* phrasing of our main question of interest. That is, on the surface, the question typically used to measure recall of public events queries participants' subjective impressions of what they consider to be the most important public

events of recent history. For instance, Schuman and Scott (1989) asked participants to “think of ‘national or world events or changes’ that have occurred over the past 50 years and to name ‘one or two . . . that seem to you to have been especially important’” (p. 362). To the extent, then, that responses to this question reflected a cognitive bias, this bias concerned the age a typical person was expected to be when the public events that he or she *considered* to be the most important of his or her lifetime took place.

Therefore, in the subjective phrasing of Study 1, the wording of the main question of interest was intended to tap into this subjective version of the youth bias. Other than the demographic questions noted in Table 1, the survey consisted of a single question, similar to the question previously used to tap cultural life scripts for private events (Berntsen & Rubin, 2004), but modified to tap the expected timing of public events. This question asked participants to imagine a typical infant of their own culture and gender, with the most relevant portion reading: “...throughout this person’s life, many important public events will take place, both nationally and internationally, such as wars, the deaths of public figures, and sporting events. How old do you think this person is most likely to be when the event that they consider to be the *most* important public event of their lifetime takes place?” Response options consisted of five-year bins, starting with *0-5 years*, and continuing with *6-10 years*, *11-15 years*, etc., up to *86-90 years*.

Results and Discussion

We first examine the overall distribution of responses, before breaking the responses down by potentially relevant demographic factors.

Overall distribution. Figure 1 illustrates the age distribution of the responses. There was a broad bump from ages 11 to 30, with no hint of a more localized peak within this range. To test the statistical significance of this increase, we conducted a binomial test probing for whether the proportion of responses from 11 to 30 was significantly greater than the proportion of responses for

the second-most frequently cited 20-year interval (we tested for the bump over the entire 20-year period because, again, the distribution of responses was relatively flat over this range). This test was significant, $p < .001$.

Demographic factors. In our analyses across demographic groups, we focus on two demographic factors in particular: (1) age and (2) education level.

Age. We split the sample around the median age (32 years). The mean age of the younger group was 24.4 ($SD = 3.6$), with a range of 18 to 31; for the older group, the mean was 51.8 ($SD = 11.9$), with a range of 33 to 81. Figure 1 illustrates the temporal distributions for the older and younger groups, respectively. As in the overall distribution, there was a bump in both cases from ages 11 to 30, $p < .001$ compared to the second-most frequently cited 20-year interval. Despite this broad similarity, there was nonetheless a significant difference between the distributions of the two groups, as indicated through a chi-square test comparing their distributions across the five-year intervals plotted in Figure 1, $\chi^2(5, N = 180) = 12.83, p = .025$.¹ Specifically, the younger group offered 16 to 20 as a response significantly more often than the older group [32.0% to 15.3%; $\chi^2(1, N = 195) = 7.50, p = .006$]. In the younger group, in fact, the 16 to 20 age interval stood as a more isolated bump within the broader bump, when compared to their second-most frequently cited five-year interval, that is, ages 26 to 30 (32.0% to 20.6%; $p = .012$ in a binomial test). Conversely, the older group was more likely to provide 6 to 10 as a response than the younger group [9.2% to 2.1%; $\chi^2(1, N = 195) = 4.65, p = .031$]. Despite these differences, both groups clearly favored the second and third decades of life.

Education level. As in the analyses for age, we probed for differences across levels of education by splitting the sample into two groups, namely, (1) participants whose highest level of education was less than a bachelor's degree, and (2) those whose highest level of education was a

¹ Degrees of freedom were depressed because we focused only on those response options with a sufficient number of responses to permit meaningful analysis. The same strategy was used in subsequent chi-squares comparing distributions across the five-year intervals we employed in collecting the data.

bachelor's degree or above. As with the age groups, both education groups demonstrated a similar bump from ages 11 to 30, $p < .001$ compared to the second-most frequently cited 20-year interval. There was no significant difference in the temporal distribution of responses across the two education groups, $\chi^2(5, N = 183) = 3.82, p = .58$.

Summary. These results confirmed our hypothesis that participants would expect that the public event a typical person considers to be the most important of his or her lifetime would most likely occur in young adulthood. However, this version of the youth bias concerns the expected timing of the public event which a hypothetical person would subjectively consider to be the most important of their lifetime, rather than the expected timing of the objectively most important event of a hypothetical person's lifetime (i.e., the timing of the *actual* most important public event). We undertook Study 2, therefore, to replicate and extend the findings of Study 1 to the expected timing of the objectively most important public event of a typical person's lifetime, which can be seen as a stronger version of the youth bias.

Study 2

Method

Participants and procedure. Study 2 was conducted exclusively through MTurk. Here, the sample consisted of 198 participants. Pertinent demographic information is presented in Table 1.

Survey. In order to probe for the expected timing of the objectively most important public event of a typical person's life, in Study 2 we employed an *objective* phrasing of our main question. That is, rather than query, as in Study 1, the expected timing of the public event that a typical person would consider to be the most important of his or her lifetime, we queried the expected timing of the objectively most important public event of this typical person's lifetime. Therefore, other than the demographic probes, the survey again consisted of a single question. As

in Study 1, this question instructed participants to imagine a typical infant of their own culture and gender. It went on to ask: "...how old do you think this person is most likely to be when the most important public event of their lifetime takes place." Response options consisted of the same five-year bins as in Study 1.

Results

As in Study 1, we first examine the overall distribution of responses, then turn to analyses across demographic groups.

Overall distribution. Figure 2 illustrates the age distribution of the responses. Following our analyses in Study 1, we tested for the presence of a broad bump from ages 11 to 30 through a binomial test, comparing the proportion of citations for this period to the proportion of citations for the second-most frequently cited 20-year interval. This test was significant, $p < .001$. Here, however, there was also a more localized peak from ages 16 to 20, with significantly more citations for this age interval than for the second-most frequently cited five-year interval, that is, ages 21 to 25 (24.7% to 18.2%; $p = .026$ in a binomial test).

Demographic factors. We again focus our demographic analyses on age and education level.

Age. As in Study 1, we split the sample around the median age (27 years). The mean age of the younger group was 22.3 ($SD = 2.6$), with a range of 18 to 26; for the older group, the mean was 42.6 ($SD = 10.2$), with a range of 28 to 71. Figure 2 illustrates the temporal distributions for the two age groups. As in Study 1, both groups evinced similar temporal distributions, which paralleled the overall distribution in that both groups demonstrated a bump from ages 11 to 30, $p < .001$ compared to the second-most frequently cited 20-year interval. Unlike in Study 1, though, there was no significant difference between the distributions of both groups, as indicated in a chi-

square test comparing the groups' distributions across the five-year intervals of Figure 2, $\chi^2(5, N = 164) = 5.74, p = .33$.

Education level. We again investigated differences across education level by splitting the sample into participants whose highest level of education was less than a bachelor's degree, and those whose highest level of education was a bachelor's degree or above. As in Study 1, both education groups demonstrated a similar bump from ages 11 to 30, $p < .001$ compared to the second-most frequently cited 20-year interval. There was, again, no significant difference in the age distribution of responses across the two groups, $\chi^2(5, N = 176) = 4.40, p = .49$.

General Discussion

We found a marked peak in young adulthood (i.e., ages 11 to 30) in citations of when the most important public event of a hypothetical person's life would be expected to occur. This broad pattern held stable across age group and education level, despite, in Study 1, slight differences in the temporal distribution across age group. These findings are particularly noteworthy in the objective condition of Study 2; as we noted in the Introduction, since the distribution of objectively important public events should logically be randomly distributed over the lifespan – even if their psychological effect on the individual varies – there is no empirical or rational basis to imagine that such events will disproportionately occur in young adulthood. As we put forth in the Introduction, then, these findings represent the discovery of a heretofore unnoted cognitive bias, the *youth bias*. The youth bias holds that the most notable experiences of one's life, whether private or public, occur in young adulthood.

To be sure, the variation in the phrasing of the survey question across the subjective and objective versions was fairly subtle. Therefore, the similarity of the distributions across the two survey versions may not have been due to the similarity of the two iterations of the youth bias, so much as participants interpreting the two questions more similarly than we had intended

(Oppenheimer, Mavis, & Davidenko, 2009). Our primary aim, however, was not to compare the two versions of the youth bias, but to demonstrate the existence of the bias itself. By demonstrating this effect across two studies, and demonstrating that, within each study, the effect held constant across different age groups and different levels of education, we believe we have provided robust and convincing evidence to this effect.

Several questions present themselves regarding this new cognitive bias, which we note as avenues for future research. First, what are its implications for cognition? For instance, the youth bias may structure recall, much as cultural life scripts structure recall from autobiographical memory. For instance, the youth bias may heighten the accessibility of public events which occurred in one's young adulthood. Indeed, there is striking overlap between the bumps we found in cultural expectations for the timing of the most important public event of one's lifetime on the one hand, and the bump in recall for public events on the other (e.g., Schuman & Scott, 1989). The youth bias may underlie, at least in part, this bump in recall for public events.

Second, to how many domains does the youth bias extend? We have shown here that it applies to the occurrence of important public events. We wonder, however, if there is a limit to the respects in which individuals expect all notable experiences to take place in young adulthood. What about the timing of when an individual will first meet the best friend they will ever have? Or even something as trivial as their first use of the best brand of toothpaste they will ever use? We would predict that a great variety of such events would show a bias in favor of young adulthood.

Lastly, is the youth bias culturally specific or universal? We have demonstrated its existence in a USA sample. However, it is an open question whether the youth bias holds exclusively in the USA, if it extends only to other Western countries, or if it can be found across nearly all cultures.

In sum, the discovery of the youth bias opens up new vistas for future research, both in terms of cultural expectations for the timing of notable events over the lifespan, as well as the implications of these cultural expectations for human cognition.

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References

- Berntsen, D., & Rubin, D. C. (2004). Cultural life scripts structure recall from autobiographical memory. *Memory & Cognition, 32*, 427-442.
- Dylan, B. (1974). Forever young. On *Planet waves* [CD]. New York, NY: Asylum Records.
- Erdoğan, A., Baran, B., Avlar, B., Taş, A. C., & Tekcan, A. İ. (2008). On the persistence of positive events in the life script. *Applied Cognitive Psychology, 22*, 95-111.
- Erikson, E. (1950). *Childhood and society*. New York, NY: Norton.
- Holmes, A., & Conway, M. A. (1999). Generation identity and the reminiscence bump: Memory for public and private events. *Journal of Adult Development, 6*, 21-34.
- Jennings, M. K., & Zhang, N. (2005). Generations, political status, and collective memories in the Chinese countryside. *The Journal of Politics, 67*, 1164-1189.
- Koppel, J. (2013). The reminiscence bump for public events: A review of its prevalence and taxonomy of alternative age distributions. *Applied Cognitive Psychology, 27*, 12-32.
- Oppenheimer D. M., Meyvis T., & Davidenko N. (2009). Instructional manipulation checks: Detecting satisficing to increase statistical power. *Journal of Experimental Social Psychology, 45*, 867-872
- Rubin, D. C., & Berntsen, D. (2003). Life scripts help to maintain autobiographical memories of highly positive, but not highly negative, events. *Memory & Cognition, 31*, 1-14.
- Rubin, D. C., & Berntsen, D. (2006). People over forty feel 20% younger than their age: Subjective age across the life span. *Psychonomic Bulletin & Review, 13*, 776-780.
- Rubin, D. C., Berntsen, D., & Hutson, M. (2009). The normative and the personal life: Individual differences in life scripts and life story events among USA and Danish undergraduates. *Memory, 17*, 54-68.

Rubin, D. C., Wetzler, S. E., & Nebes, R. D. (1986). Autobiographical memory across the adult lifespan. In D. C. Rubin (Ed.), *Autobiographical memory* (pp. 202-221). Cambridge, UK: Cambridge University Press.

Schuman, H., & Scott, J. (1989). Generations and collective memories. *American Sociological Review*, *54*, 359-381.

Table 1.

Demographic Information

Study 1	Study 2
Age: <i>M</i> = 38.1 years (<i>SD</i> = 16.1; range = 18-81)	Age: <i>M</i> = 32.7 years (<i>SD</i> = 12.4; range = 18-71)
Gender: Male: 63.0% Female: 37.0% Genderqueer: 0%	Gender: Male: 60.6% Female: 37.9% Genderqueer: 1.5%
Race/Ethnicity: Caucasian: 79.5% Asian American: 8.0% Hispanic: 5.5% African American: 4.0% Native American: 2.0% Mixed/Other: 1.0%	Race/Ethnicity: Caucasian: 82.3% Asian American: 8.1% Hispanic: 2.5% African American: 4.0% Native American: 1.0% Mixed/Other: 2.0%
Education Level: Less Than High School: 0% High School: 10.5% Currently in College/Some College: 31.0% Associate's Degree/Technical Degree: 9.0% B.A./B.S. Degree: 38.0% Graduate Degree: 11.5%	Education Level: Less Than High School: .5% High School: 11.6% Currently in College/Some College: 27.3% Associate's Degree/Technical Degree: 6.1% B.A./B.S. Degree: 43.9% Graduate Degree: 10.6%