Potentially therapeutic effects of telling and retelling meaningful life stories

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Abstract

We investigate how autobiographical stories of meaningful life events differ from other stories, and how the emotional dynamics of these stories shift when retold by the same narrators. Participants were initially asked to write down a personally meaningful memory. Later, they were invited to retell the same memory. As a baseline, we analyzed a previously collected set of stories that emphasized sentiment (sad vs. happy) but not meaningfulness. To examine emotional patterns, we utilized self-reported emotions, external ratings on core emotions, and sentiment analysis of stories, capturing both overall sentiment and emotional shifts within each story. Our findings showed that meaningful memories tend to be more positive than baseline stories, with a notable increase in positive emotions toward the end of the stories. However, in retelling, both positive and negative core emotions decreased. We suggest that the telling and retelling of a meaningful memory has therapeutic effects that emphasize positive sentiments, while decreasing the emotions to allow for a reframing of the memory.

Keywords: autobiographical memory; narrative; emotion; serial reproduction.

Introduction

Humans tell stories every day, and storytelling is a near-universal means of communication that occupies us for many hours a day (Dunbar, 1996; Gottschall, 2012). Storytelling also seems to come easy to people and is well remembered (Bartlett, 1995). There are a range of potential selection advantages for storytelling, such as sharing of information, group bonding (Dunbar, 1996), and manipulation of others, for example by self-advertising (Bietti et al., 2019). Storytelling is a form of joint attention (Tomasello, 2010) that allows co-experience (Breithaupt, 2025).

Humans tell a wide range of stories, some are the retelling of other's stories, and some come from their own memories. Some memories deal with more trivial topics concerning recent events, some deal with life-changing events. In the present context, we wonder about the benefits of storytelling specific to the case of organizing one's own life as a story within the context of meaningful memories. When people reflect on their life, it often takes the form of a story (Bruner, 2003), and it has been a matter of debate whether having a narrative identity could be beneficial (Singer, 2004) or whether this concept is too undefined to be useful (Strawson, 2004). We are not pursuing this question here, but instead, wonder about the potential therapeutic effects of storytelling that arise from repeated recall and repeated sharing of meaningful memories. More specifically, we are interested in two overall questions:

1. What are meaningful memories? How do they differ from other stories and memories?
2. What are the potential benefits of retelling one's own meaningful memories?

We approach these questions by providing data about the stories people tell when asked to share a meaningful memory and then retell it later.

Life Stories and Meaningful Memories

The concept of meaningful memory is not clearly defined. Meaningful memories are often connected with significance, transformative impact, and guidance for decision-making. Meaningful memories also tend to include a theme that relies on an emotional change in the story (e.g., redemption, contamination), focus on relations (e.g., communion), or self-description (e.g., agency, exploratory narrative processing) (McAdams & McLean, 2013). These themes (McAdams, 2001; McAdams et al., 2001) are often linked to personality traits, well-being (Bauer et al., 2008; McAdams et al., 2001), and health behaviors (Dunlop & Tracy, 2013).

In addition to the theme, the later organization of the memory also impacts the meaningfulness. Even seemingly trivial moments can be turned into meaningful memories in a process called "retrospective meaning discovery" (van de Goor et al., 2020). In one of the retellings in our dataset, the individual recalled when they were given a cell phone by their family, right before they went to college. While seemingly trivial, the individual mentioned how, in retrospect, they acknowledged that their parents, as immigrants, struggled to make ends meet, and even so, that their father wanted them to feel comfortable going to college, where an old cell phone could make them feel embarrassed. The creation of meaning is thus likely the result of a dynamic process that involves the balancing of opposing and different experiences, themes, and later reorganization of the memory (Newitt et al., 2019). For example, in the process of discovering retrospective meaning, people commit to a "letting go" of control to move to some form of acceptance (van de Goor et al., 2020). In our study, we will consider both thematic dimensions and retrospective framing of meaningful memories.

One aspect of meaningful memories is their reliance on emotional intensity. Two themes commonly cited in meaningful memory research are *redemption* and

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contamination themes. Both include emotional change or flow (Fitzgerald et al., 2023). A story with redemption is observed when the story has a negative beginning (e.g., the person being at a low point in their life) but ends positively at a high point, with the focus on self-growth after the experience rather than focusing on the negativity of the event. Contamination, on the other hand, exists in stories that start positively yet end negatively at a low point, such as learning the underlying motives behind the positive event, experiencing betrayals, or losses. McAdams and McLean (2013) exemplify redemption in a story where the narrator describes the death of her father as reinvigorating closer emotional ties to her other family members, and contamination in the story where the narrator is excited about a promotion at work but learns it came at the expense of his friend being fired.

Rogers et al. (2023), building on McAdams, (2006), suggest that those stories are seen as particularly meaningful that are modeled on a redemptive story arc in which the protagonist of the story overcomes obstacles in their life to see themselves as a hero. Participants who choose such a redemptive story arc or who are promoted to "restory" their life accordingly see their life as more meaningful and experience therapeutic effects (Rogers et al., 2023).

A key characteristic of redemptive and contaminated stories is their sequential nature. Rather than commencing with a static emotional state or a mere unfolding of events, these stories progress through a dynamic sequence. There is a change in emotions, which goes from negative to positive or vice versa. The event description is also dynamic in the sense that it builds the story by reasoning and explaining the evolution of self throughout the story. Although intuitively the change in emotion is expected in meaningful stories, and emotion has been used as a metric to assess redemption in stories in automated analysis (Sagi & Jones, 2018), to our knowledge, no studies have examined if meaningful memories have a different emotional trajectory compared to other forms of storytelling. The current study investigates whether meaningful life stories differ from other stories regarding emotional trajectories. In general, the difference between meaningful memory stories and other stories has not been much explored.

Retelling Stories

Repeated retelling has been studied intensively since Bartlett's seminal study (Bartlett, 1995). Retellings tend to be shorter and more focused on minimally counterintuitive (Norenzayan et al., 2006) and social events (Mesoudi et al., 2006) with higher degrees of rationalization (Bartlett, 1995). Interestingly, while most elements of stories decay, the intensity of several emotions arising from the story remains unchanged (Breithaupt et al., 2022; He et al., 2023). Audience effects influence how stories are retold (Dudukovic et al., 2004).

However, less is known about the effects of retelling meaningful memories. By remembering and sharing life memories as stories, individuals perform, at the same time, a two-fold movement: on the one hand, they elicit emotions on the part of their audience, leading to a sharing of emotions and experience (Breithaupt, 2025); on the other hand, they also relive or recollect their own emotions as they write. In this process of retelling the memory, they may change, edit, and reframe the story to increase or decrease these effects. For example, increasing emotions could be well suited to attract audiences (Stubbersfield et al., 2017), while decreasing emotions could serve a therapeutic function to de-intensify the memory. It is not clear whether meaningful memories are edited differently in this process than more trivial events that are recalled.

In our study, we examine how meaningful memories change in the process of retelling. If meaningful memories behave like other stories, they would decay in length and quality, while maintaining their overall emotion with high stability. Our hypothesis is that there are notable effects of retelling meaningful memories that include changes of emotions and increasing aspects of framing.

The Current Study

The current study explores the distinct emotional patterns present in meaningful memories, which play a pivotal role in self-construction and are often rich in emotionally dynamic themes such as redemption and contamination. Rather than providing definitions or examples of meaningful memories, we simply instructed the participants to share a memory they found "meaningful". This approach enabled us to observe how meaningfulness, defined by participants, evolved naturally across retellings. We then contrasted these narratives with a control set in which participants were instructed to tell stories–autobiographical or not–with either "happy" or "sad" sentiment. While some overlap exists, the present study focuses on the unique sentiment trajectories exhibited when "meaningfulness" is emphasized. To investigate this hypothesis, we apply sentiment analysis across various narratives to examine the evolution and fluctuations of sentiment. This approach allows us to compare different parts of stories (i.e., beginning, middle, and end) to one another and analyze how the story arcs of meaningful memories differ from those in conventional storytelling.

Methods

Participants

265 participants completed both parts of our study for monetary rewards through Prolific. We limited the subject pool to English-speaking residents of the US who are 18 or older. We used several filters, such as grammar filters. Of the admitted participants, 16 were removed because of their invalid memories (e.g., telling a different story in two rounds, refusing to tell the memory), resulting in 249 participants.

Due to ongoing human rating data collection (see below), only 229 subjects received ratings for both retellings, and we limited our analysis to those.

Materials and Procedure

In the study, participants were instructed to write down a meaningful life event they personally experienced and found important, preferably one they didn't retell often, with more than 100 words. Participants were randomly assigned to either a feedback condition (where their memory would be shared, allowing them to edit based on the feedback) or a no-feedback condition (where they were simply asked to edit). This feedback manipulation, though part of the larger study, is not relevant to the present analysis and does not affect the reported results. All participants then returned for a second round to retell their memories after 3.5 days on average. For doing so, we piped their original title into the prompt. After each session and retelling, participants also rated a range of questions, such as the intensity of emotions they feel now for the memory from a list of nine core emotions (*happy, sad, angry, surprised, disgusted, scared, embarrassed, proud, amused*), and their subjective experience of their memory (e.g., *vividness, reliving, importance*) (Rubin et al., 2003). As the baseline stories, we analyzed stories collected from a previous study (Breithaupt et al., 2022). In the baseline dataset with stories of similar length, a group of participants (N = 116) on Amazon Mechanical Turk (AMT) were asked to write a story with a specific emotional tone (either *happy, mildly happy, mildly sad,* or *sad*). They were instructed to avoid using explicit emotional words, such as "happy" or "sad," but there were no other constraints on story content. This dataset was chosen to ensure an equal distribution of positive and negative stories.

Sentiment Analysis We implemented the Valence Aware Dictionary and Sentiment Reasoner (VADER) (Hutto & Gilbert, 2014) to conduct the sentiment analysis, which assesses the valence of the stories. For each text unit, VADER produces sentiment score vectors containing negative, neutral, positive, and compound scores. In the present study, we used the compound score for each story in the participants' writing, which captures the overall sentiment ranging from negative (-1,0), neutral (0), to positive (0,1). We also examined how sentiment changes within the story by dividing it into three equal parts: the beginning, middle, and end. If the memory could not be evenly split, we allocated the extra sentences into the middle part.

External Raters A total of 274 English-speaking U.S. participants (18+) were recruited via Prolific to rate meaningful and baseline stories on meaningfulness and emotions. After excluding 71 incomplete responses, 5 outliers (based on the interquartile range), and 14 bot-flagged cases, 184 raters were left. Each rater evaluated 10 randomly selected stories. The stories were drawn from three groups: the memory stories edited in the first telling; the memories as they were retold some days later; and the baseline stories. External raters categorized the content of each story, identified the emotions they detected out of nine core emotions in the memory, completed a modified version of the Emotional Flow Scale to assess flow within the stories, and answered other questions (e.g., reflection, meaningfulness) (OSF link: https://shorturl.at/XOaoD).

Results

Throughout the results, when the ratings did not follow a normal distribution, we applied a nonparametric Mann-Whitney U test to compare the two groups, unless a different test is explicitly specified.

Meaningful Memories Are Often About Milestones in Life

We asked raters to determine whether the event described in the text could be described as one of the events in the life script (Berntsen & Rubin, 2004). A significant portion (52/229, 23%) of the memories in our dataset do not fit any of the events in life script events ("other" option). However, the percentage is much higher (32/76, 42%) for the autobiographical stories in the baseline dataset, suggesting that a higher percentage of participants in our experiment recall events that resemble milestones in their life, in other words, events told as meaningful memories align more with life script events than baseline stories.

Table 1: Top 10 Themes in Meaningful and Baseline Datasets.

Meaningful (N = 229)	Baseline (N = 76)
Other (23%)	Other (42%)
Major achievement (11%)	Leave home (7%)
Long trip (9%)	Long trip (7%)
Fall in love (7%)	Others' death (7%)
Having children (7%)	Having peers (5%)
Others' death (6%)	First rejection (4%)
Parents' death (5%)	Having children (4%)
Having peers (5%)	Major achievement (4%)
Serious disease (3%)	Fall in love (3%)
Leave home (3%)	First job (3%)

In addition, the distribution of the events is more concentrated for the meaningful ones: the top five frequent labels used from the list–including milestones such as "fall in love" and "having children"–cover 39% of the memories, while for the baseline stories they cover 29% of the memories. The difference in distribution is significant according to the

Kolmogorov–Smirnov test (D =.53, p < .05). The top 10 in both datasets can be found in Table 1.

Meaningful Memories Are Told with Reflection

To determine whether meaningful memories differ from other stories, we compared ratings of external raters on meaningfulness (*"In your estimation, how meaningful has the event been to the person who shared the memory?"*) and reflection (*"The memory or story includes a description of how this event still matters to them now."*). Ratings for meaningfulness (first: U = 11012, p < .001, r = .73, second: U = 10434.5, p < .001, r= .69) and reflection differed in baseline and both two rounds of meaningful stories (first: U = 18758, p < .001, r = .76, second: U = 17647, p < .001, r= .71). Baseline stories ($M_{meaning}$ = 3.33, $M_{reflection}$ = 55.84, N = 108) were rated as less meaningful and described with fewer reflections than first ($M_{meaning}$ = 4.10 N = 199, $M_{reflection}$ = 77.48, N = 229) and second retellings ($M_{meaning}$ = 3.95 N = 200, $M_{reflection}$ = 74.41, N = 229). These findings confirm that meaningful stories are perceived as more meaningful and include an explicit description of the reasons why they are meaningful, compared to baseline stories.

Meaningful Memories Are More Positive

To assess the valence of stories, we conducted a sentiment analysis using VADER scores. This analysis revealed significant differences in the valence of the memories. Baseline stories (M = .48, N = 108) were significantly less positive than both first retellings (M = .58, N = 229; U = 14316, p = .02, r = .58) and second retellings (M = .56, N = 229; U = 14229, p = .03, r = .58). However, the sentiment of first retellings did not differ significantly from second retellings (p = .98).

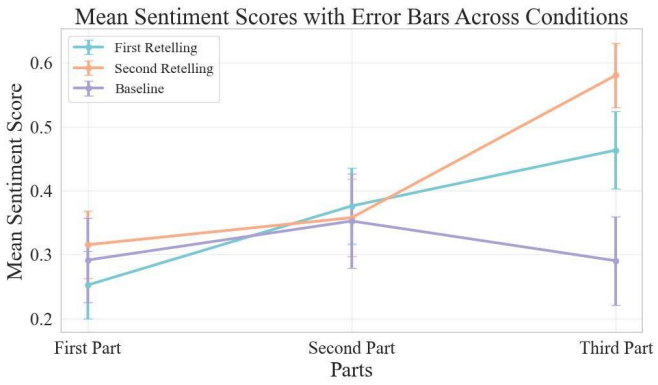

Figure 1: Sentiment Across Story Parts.

Meaningful Memories Become More Positive at the End Part

We examined the emotional flow of stories using both human ratings from our raters and sentiment analysis of the start, middle, and end parts of stories.

Emotional Flow First, emotional flow was assessed by human raters. They rated a modified version of the Emotional Flow Scale (Fitzgerald et al., 2023), which was adapted to evaluate the story's flow rather than the audience's experience of flow. Emotional flow ratings were not significantly different between first retelling of meaningful memories (M = 4.29, N = 229) and baseline stories (M = 4.41, N = 108; U= 11463, p = .28), as well as first and second retellings (p = .17). However, second retellings of meaningful memories (M = 4.14, N = 229) were rated as having less emotional flow compared to baseline stories (U = 10528, p = .03, r = .43).

Sentiment Across Story We analyzed sentiment across the beginning, middle, and end of each story by dividing it into three equal-length segments. Sentiment scores were then calculated for each segment across both the "Meaningful" (*First and Second Retellings*) and "Baseline" groups. To ensure reliable sentiment analysis, we included only texts with at least nine sentences, resulting in 70 baseline stories and 103 meaningful memories. This segmentation produced distinct sentiment scores for each story type, as illustrated in Figure 1 (In all figures, error bars represent the standard error of the mean).

When we explored the average sentiment of these stories, we observed the second retellings (M = .42, N = 103) were significantly more positive than baseline stories (M = .31, N = 70; U = 2892, p = .03, r = .40). Neither the difference between first retellings (M = .36, N = 106) and baseline stories (p = .24), nor the difference between first and second retellings (p = .29) reached statistical significance.

To assess the influence of story parts on sentiment, we conducted a linear mixed-effects model using the 'lme' function from the 'nlme' package in R (Pinheiro et al., 2025). Our model (Model 1) included group (*Meaningful, Baseline*), story part (*First, Second, Third*), and round (*First retelling, Second retelling*) as fixed effects, as well as subjects as a random effect. Data comprised 714 observations from 133 participants. Results revealed a significant positive effect of the story part (β = .07, SE = .02, t = 3.23, p < .01), indicating an increase in sentiment towards the end of the stories. Neither group (β = .07, SE = .06, t = 1.17, p = .24) nor round (β = .046, SE = .04, t = 1.23, p = .22) had a significant effect. Model fit was adequate: AIC = 1444.26, BIC = 1472.79.

A second mixed-effects model (Model 2) examined the interaction between story part and group on sentiment scores, again with random intercepts for subject. This model (AIC = 1435.28, BIC = 1463.81) demonstrated a better fit than Model 1. A significant interaction was observed between story *part* and *group* (β = .13, SE = .04, t = 3.22, p < .01), indicating a

stronger positive effect of story part on sentiment in the Meaningful group compared to the Baseline group. While the interaction was significant, neither the story part alone (β = .001, p = .97) nor the group (β = .187, p = .06) significantly predicted sentiment (Figure 1).

In addition to these analyses, we also examined sentiment patterns in memories (Table 2). A chi-square analysis found no significant difference in these patterns between experimental groups (X^2(4, N = 176) = 3.95, p = .41). However, a trend was observed where meaningful memories were more likely to end with a higher sentiment.

Table 2: Distribution of Sentiment Patterns Among Stories.

Patterns	Meaningful (N = 106)	Baseline (N=70)
Down, Then Up	33 (31.13%)	19 (27.14%)
Up, Then Down	33 (31.13%)	27 (38.57%)
Consistently Up	28 (26.42%)	12 (17.14%)
Consistently Down	10 (9.43%)	11 (15.71%)
Other	2 (1.89%)	1 (1.43%)

Retelling Reduces Emotions

Lastly, we conducted a comparison analysis of the emotion ratings for meaningful memories from both participants (narrators) and external raters across nine core emotions. Since participant ratings were unavailable for the baseline stories, they were excluded from this analysis. We then compared the external raters' emotion assessments between the first and second retellings, alongside participants' self-reported emotions about their memory at each stage. To analyze changes in specific emotions, we first calculated the average emotion rating for each story by averaging its ratings across all nine rated emotions. A memory was included in the analysis of a specific emotion if its rating for that emotion exceeded its overall average emotion rating. For example, if a story had an average emotion rating of 3.9 and received a rating of 5 for anger, it was included in the analysis of anger. We call these above-average emotions core emotions. Please also note that the length of stories did not change between the first ($M_{\text{wordCount}}$ = 174.11 and the second retellings ($M_{\text{wordCount}}$ = 168.80, U = 28586.5, p = .09).

External Raters Human raters' assessments showed no significant differences between retellings for happy (p = .94, N = 193), sad (p = .20, N = 86), and embarrassed (p = .10, N = 24) ratings. However, differences emerged for angry (U = 600, p = .03, r= .67, N = 30), surprised (U= 16907, p < .001, r = .62, N = 161), disgusted (U = 164.5, p = .03, r = .73, N = 15), scared (U = 2048, p = .02, r = .63, N = 57), proud, and amused (U = 8928, p < .001, r = .64, N = 118) (Figure 2).

Participants Participants' self-reported emotions also remained stable for angry (p = .21, N = 26), scared (p = .20, N = 18), embarrassed (p = .27, N = 29), and proud ratings (p = .11, N = 174). However, their reported feelings significantly differed between the first and second retellings for happy (U = 20323, p = .02, r = .57, N = 189), sad (U = 4029, p = .03, r = .60, N = 82), surprised (U= 11.383, p < .001, r = .79, N = 120), disgusted (U = 435, p = .02, r = .70, N = 25), and amused ratings (U = 5616, p = .02, r = .60, N = 97) (Figure 3).

Participants rated the vividness, reliving, and importance of their memories. Vividness was significantly higher in the first round (M = 6.68) than the second (M = 6.28; U = 32.178, p < .001, r = .61). Participants also reported telling others about the event more often in the second round (M = 24.02) compared to the first (M = 16.85; U = 21270, p < .001, r = .41). While reliving (p = .07) and importance (p = .66) of first and second retellings were not different.

Discussion

The current study focuses on exploring the differences of meaningful memories from other stories, with a focus on sentiment, emotional flow, and story emotions. We collected meaningful memories and compared them to a similar collection of stories (baseline stories) where participants were not instructed to tell a meaningful story. We also asked the participants to retell their meaningful memories several days later. Our findings are that meaningful stories show several distinct features concerning 1) a more limited set of themes, 2) explicit framings or reflections about the meaningfulness, and 3) an emotional uptick of sentiment at the end of the story. 4) It also appears that the second telling of the memory, that is, the retelling a few days later, reduces the memories' emotions (e.g., how sad/embarrassing/angry the story is) and vividness, while story length remains the same. This final finding is slightly paradoxical, given that the overall sentiment increases even more in the second telling at the end of the story. We will discuss these findings below.

Meaningful memories intensify emotional flow from start to end

For the "Meaningful" group, a marked increase in sentiment is observed from the beginning to the end, indicating significant emotional evolution. This pronounced shift suggests that individuals who recount meaningful memories are more likely to embed and edit emotional content throughout their stories.

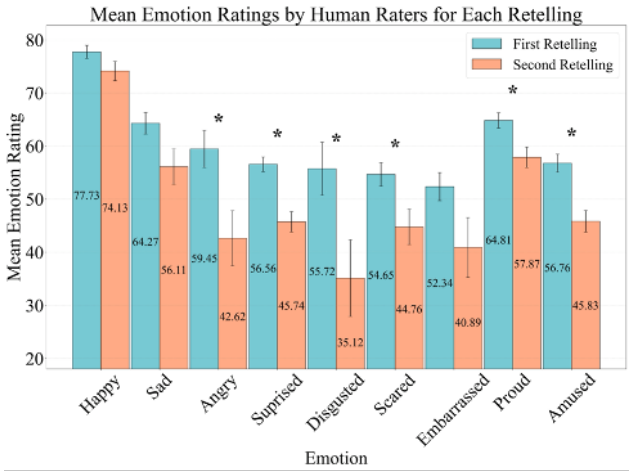

Figure 2: Average Emotion Ratings of External Raters for Meaningful Memories.

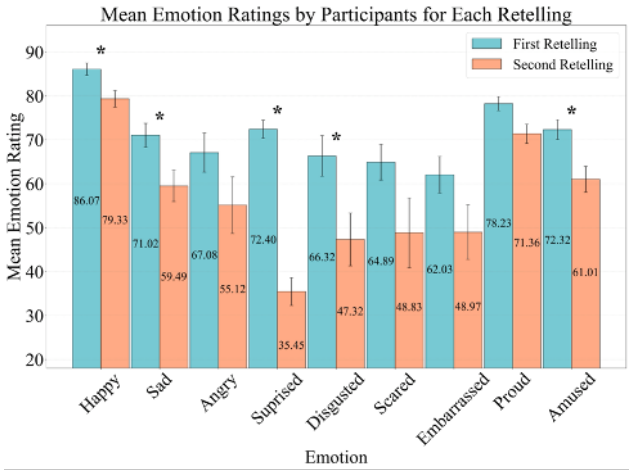

Figure 3: Average Emotion Ratings of Participants (Narrators) After Retelling their Meaningful Memories.

This phenomenon can be interpreted through the lens of narrative psychology, which posits that personal storytelling is not only a reflective process but also an act of meaning-making. In other words, the framing effect plays a role when people try to reconstruct meaningful life episodes. (van de Goor et al., 2020). As individuals recount events of personal significance, they engage in a dynamic process of emotional elaboration, weaving their feelings more intricately into the story structure. This is further supported by research indicating that the act of sharing meaningful experiences can intensify emotional expression, as it involves revisiting and re-evaluating one's emotional states, thereby enriching the story with emotional depth (Pennebaker & Seagal, 1999).

Conversely, for the "Baseline" group, the emotional intensity shows minimal variation as the story progresses from beginning to end. This stability in emotional expression suggests that when participants narrate more routine or less significant events, the emotional engagement and the incorporation of emotional elements into the story remain relatively constant or are equally distributed in all parts of the story on average. This observation may reflect the nature of everyday storytelling, where the recounting of daily experiences does not necessarily invoke a deep emotional processing or significant re-evaluation of emotional states (Pasupathi et al., 2007). The distinction between the two groups underscores the impact of story content on emotional expression, highlighting how personal significance and emotional investment in a story can shape the story's emotional trajectory.

Therapeutic effects of retelling

One of our core findings is that the second retelling of meaningful life memories decreases the core emotions of the original memories. This effect of decreasing emotions occurred for all emotions. The change was measured by both external raters and the narrators of their own memory themselves, revealing significant differences in several positive and negative emotions. It was significant for the external raters for amused, angry, disgusted, scared, embarrassed, and surprised (Fig. 2); and it was significant for the narrators for happy, amused, sad, and surprised (Fig. 3). This effect of decreasing is apparently not an effect of simple leveling or decay of the story, since the overall length of stories was the same for first telling and subsequent retelling several days later. It is also noteworthy that the story arc increased its emotional flow notably between the first telling and second retelling (Fig. 1). Specifically, the second retellings amplified the positive sentiment of the story endings even more than the first retellings, thereby increasing the emotional flow (Fitzgerald et al., 2023) from the more neutral start of the story.

This effect of meaningful memory retelling is distinct from other stories that have been found to decay (Bartlett, 1995) while maintaining their core emotions (Breithaupt et al., 2022) in retelling. We propose to account for this effect as an increasing of clarification and reframing of the meaningful memory. By reducing the emotional intensity of the story while increasing the positive sentiment of the ending, potentially fitting the framework of redemption story arcs (Rogers et al., 2023), the overall meaningfulness increases and allows for a positive, distant reframing of the memory (van de Goor et al., 2020).

While this effect suggests that retelling by itself has therapeutic effects, more studies are needed to confirm these trends. For example, examining whether the therapeutic effects stem from retelling or merely the passage of time requires further testing. This could involve adding a control group in which participants do not engage in retelling. Our full study will also explore the effects of different instructions and feedback conditions. We aim to inspire future research that explores the emotional and cognitive benefits of editing one's life narratives.

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