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<https://doi.org/10.1057/s41599-025-06426-y>

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What might we learn about autobiographical narrative processing from Artificial Intelligence?

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Human beings are innately storytellers. Large Language Model AI algorithms (LLMs) like ChatGPT are not. But what ChatGPT produces, when instructed to generate or interpret a narrative, is powerful and can provide insight into human narrative processing, because it is trained to produce narratives from human sources. Our paper explores these ideas. In the first section we review key concepts from narrative identity theory and research, including a recent study from our multi-institution collaboration exploring similarities and differences in human and AI narrative processing. The current study extends this work by exploring people's perceptions of ChatGPT interpretations of human personal narratives. Across these studies we find that people are adept at differentiating between human and ChatGPT-generated self-defining memory narratives and this may be because ChatGPT relies on redemptive tone and structure, a culturally dominant master narrative, in ways that seemed inauthentic and uncanny to human participants. Discussion focuses on key questions this work raises for research on narrative meaning-making, authenticity through narrative identity, and therapeutic uses of AI.

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Across time and culture, human beings are storytellers; this truism is reiterated in philosophy (Polkinghorne, 1988; Ricoeur, 1991), sociology (Borisenkova, 2009), evolutionary biology (Boyd, 2018; Donald, 2001), and neuroscience (Damasio, 2012), as well as across the humanities (Eakin, 2011). Within cognitive psychology, the power of stories was articulated by Bruner (1991a, 1991b), who argued that stories define the social construction of the world, and within personality psychology by McAdams (1992), who argued that stories define our very sense of self. Whether epic stories of world origins and mythic heroes or everyday stories of human exploits and adventures, stories are the way we understand the world around us (Goodman, 1978), the people we interact with (Gallagher & Hutto, 2008), and our own personal being, our *narrative identity* (McAdams & McLean, 2013; Singer, 2004).

Whereas stories have been with us even before we had the language within which to express them (Donald, 2001), new and emerging technology allows storied experiences—no matter the importance or perceived magnitude—to be shared among people through texting, emailing, blogging, vlogging, sharing tweets and more. Both fictional stories (e.g., novels, plays, movies) and autobiographical stories (e.g., memoirs, diaries, personal journals), are now digitally formatted for online consumption, creating a huge digital corpus of stories. This collection of storied or narrative data can be used to train Large Language Model Artificial Intelligence Algorithms (LLMs; e.g., Claude, ChatGPT, Llama) to *decode* and, perhaps more intriguingly, to *produce* personal narratives of events that these LLMs have clearly never phenomenologically experienced. Yet, like an image reflected by a mirror, the text generated by LLMs may reveal something essential about human storytelling—and, in turn, perhaps, some of the things that make us distinctly human.

Obviously, a crucial difference is that human narration is embodied and usually socially constructed. During a conversation, the central nervous systems of both the teller and the listener receive signals from multiple sensory modalities, process those signals and respond with verbal and nonverbal expressions of ideas and meanings that both teller and listener organically understand and adapt to (Armstrong, 2018; Zak, 2015). The psychological process of narrative construction by which we develop and share new meanings occurs iteratively through biological experience with an interlocutor. Although quite impressive at linguistic tasks, ChatGPT works differently because, among other reasons, it is non-biological. “*ChatGPT is only physically ‘present’ via internet-connected devices; it is not a biologically embodied organism engaged in creative meaning-making...The large language model on which ChatGPT is based treats ‘natural language’ as sequential data, and produces language through inductive reasoning, a process of generating linguistic expressions or constructions based on patterns and regularities observed in previously encountered data* (Demuro & Gurney, 2024).” Philosophies such as Transhumanism, defined broadly as the enhancement of human capabilities through technological augmentation, might suggest that organic human narrative processing can be enhanced by interfacing with machine-like linguistic operation of ChatGPT. While we remain agnostic to this possibility, we ask a different question as a group of researchers who focus on narrative identity: how might new LLM technologies that can generate and respond to personal narratives provide insights into both the process and product of human narrative identity? Our goal is *not* to argue for or against LLMs generally or AI like ChatGPT specifically, but rather to use the technology to illuminate how and what personal narratives can tell us about human narrative processing. Next, we briefly review narrative identity theory, then we present the current study, and then conclude the manuscript with an exploration of farther-reaching

questions about narrative identity and the socio-cultural implications of the rise of LLM AI’s such as ChatGPT.

Meaning making through narrative

Narrative identity encapsulates the idea that individuals construct a life story that integrates lived experiences into a reasonably coherent narrative of how one became the person one is and who one wants to be, a storied identity that implicitly and explicitly encodes values, beliefs, and motivations (McAdams, 1992; McAdams & McLean, 2013). Narrative identity is theorized as a layer of personality (e.g., McAdams & McLean, 2013), yoked to, but distinct from constructs like personality traits (e.g., extroversion, neuroticism) and characteristic adaptations (e.g., agency, communion), which are overarching constructs that guide high-level processing of experience. In contrast, narrative identity is idiographic and concrete, tied to individual lived experiences. More specifically, narrative identity involves narrative processing, the interpretation and evaluation of lived experience in ways that create a sense of meaning and purpose (McAdams, 1992; McLean et al., 2007; Singer, 2004). Moreover, narrative processing is a causal force in human lives. Concurrently, narrating coherent, agentic, and emotionally positive and resolved narratives is positively associated with lower depression, lower anxiety, sobriety, higher eudaimonic measures of well-being (sense of meaning and purpose in life, flourishing), with wisdom, and with the capacity to forgive (Adler, 2012; Bauer & McAdams, 2010; Bauer, et al., 2005; Booker, 2019; Dunlop & Tracy, 2013; Lilgendahl & McAdams, 2011; Mansfield et al., 2010; McAdams et al., 2001; Singer, 2004; Singer & Bluck, 2001; Sutin & Robins, 2005). Importantly, in longitudinal correlational research, these same aspects of narrative processing have been shown to prospectively predict similar positive outcomes (Adler et al., 2016; Booker et al., 2020; Booker et al., 2022; Mansfield et al., 2015; Pals, 2006). And the reverse also holds; for example, as individuals narrate more negative connections to self within personal narratives, they score higher on depression and anxiety, have more frequent experiences of negative emotional states, a greater likelihood of ruminating on experiences, and poorer psychological well-being (Banks & Salmon, 2013; Banks & Salmon, 2018; Merrill, et al., 2016).

Equally important, forms of individual narrative meaning-making are constructed through and with others. Beginning early in development, individuals learn how to construct narratives of personal experiences that conform to culturally appropriate frameworks (Fivush, 2022; McLean et al., 2007). These culturally canonical narrative frameworks, often called “master narratives” (Hammack, 2008; McLean & Syed, 2016), provide templates for understanding and evaluating personal experience within culturally mediated worlds. McAdams (2013) has argued that the canonical cultural American narrative is one of *redemption*, of moving from an initially negative place to a position of growth and strength. This classically American cultural narrative of redemption is echoed in the founding story of the Pilgrims, the Horatio Alger immigrant story, and modern-day stories of Dolly Parton and Oprah Winfrey (Fivush, 2022). The extent to which this American canonical narrative may have generalized across multiple cultures is still unknown (but see Mansfield et al., 2025 and Turner et al., 2024), but it is clear that redemption is an important American master narrative (McAdams, 2008; McLean & Syed, 2016; Syed & McLean, 2022). Indeed, with US samples that include adolescents, emerging adults, and midlife adults, redemption narratives are related to higher levels of well-being (e.g., Adler & Poulin, 2009; McAdams et al., 2001; McLean & Breen, 2009), and US listeners like redemptive stories better than non-redemptive stories; they pull for redemption when listening

to stories (“But you learned something from all this, didn’t you?”), and they like people who tell redemptive stories better than people who tell non-redemptive stories (Hix, 2017; McLean et al., 2020).

In summary, decades of research has established both that narrative is a critical layer of personality and that the way in which individuals narrate their lives is a critical aspect of well-being. Further, there is some indication that a particular narrative form, the redemption narrative, plays a central role, at least in the US, in shaping what a “good” narrative is.

Can human participants distinguish human- and ChatGPT-generated personal narratives?

In a recent study, we asked whether human respondents could distinguish between personal narratives produced by humans and those produced by AI. We examined people’s subjective reasons for choosing human or AI as a source of personal narrative in order to ascertain whether human-produced and AI-produced personal narratives differed in any reliable way.

Participants were shown a series of 5 narratives from a corpus of 20 human-produced and 20 ChatGPT-produced narratives about self-defining and turning point memories¹. The narratives were randomly selected across participants and participants were told that some or all of the narratives were human- or AI-produced. After making their judgement, participants provided open-ended reasons for their choice.

Participants performed significantly above chance in correctly identifying the narrative source; they were better able to accurately identify human-generated narratives, choosing correctly ~71% of the time, over AI-generated narratives, which they identified correctly ~60% of the time. Thematic analysis coding of the explanations showed that participants tended to rate a narrative as human when they judged the memory as genuine (e.g., “it feels real”) and including specific details of lived experience (e.g., “human element seen with the descriptions of surroundings”, “Person would remember a specific age when things happened”). AI narratives were also judged to be too formal in terms of both coherent structure and elaborate vocabulary.

Intriguingly, although we did *not* prompt AI to construct positively valenced “self-defining memories” or to end its story with a positive resolution, AI typically did and participants noted that as a content cue (e.g., “too inspirational - Not Human”). Indeed, positive endings, including insight-gains that seemed out of place, were featured in AI-generated self-defining memory narratives. The results of this first study suggest that humans are able to identify “something different” in how AI employed those narrative tropes that cued them to whether the narrative was human- or AI-generated, and that, even though redemption is a positive attribute of human narratives, it can sound “off” if overly emphasized. How might this finding correspond with previous empirical findings that people prefer redemption stories, and like people who tell redemptive narratives? Why might these narratives feel “off”? And what might this tell us about how humans make redemptive meaning out of their own experiences and the experiences of others?

Current study: does ChatGPT provide positive interpretations of people’s personal narratives of self-defining memories?

Building on this earlier work, we shifted focus on LLM-generated stories and the ways humans make sense of these stories, and explored the following questions. If ChatGPT produces personal narratives that participants sense are ‘off’ in terms of being too formal and artificially positive, perhaps its *interpretations* of human personal narratives will also be perceived as off by

participants. In some sense, we are changing the question from how one *tells* a narrative to how one *hears* a narrative, which for humans is an intricately interleaved process. If ChatGPT produces formal and artificially positive interpretations of human personal narratives, when they are not positive, it would suggest a bias toward redemptive narration. By interpretation, we mean an explanation of the meaning of something. How will ChatGPT interpret, that is explain the meaning, of a human personal experience? Thus, this study extends our past work by exploring whether or not ChatGPT would emphasize positive self-transformation when it was instructed to interpret the narrator’s lived experience. Given that ChatGPT “tells” overly redemptive narratives, does it “hear personal narratives as overly redemptive as well? If so, how might human participants evaluate ChatGPT’s interpretations?

Method

Participants. Undergraduate students in junior and senior courses at an East Coast liberal arts college and a Midwest R2 university in the United States were invited to complete a Qualtrics survey to earn extra credit. Forty-four students provided usable data ($Mage = 21.1$, $SD = 0.85$; 61% female, 61.4% White or European American, 9.1% Asian or Asian American, 9.1% Latino/a/x or Latin American; 2.3% Black or African American; 2.3% mixed race/other; 2.3% reported prefer not to say; 13.5% failed to respond to the ethnicity question).

Procedures and materials. After consenting, participants were asked to read the five narratives and interpretations of those narratives. Participants were informed that the narratives were all human-generated but the interpretations may have been generated by a person or by an LLM AI (however all interpretations were generated by Chat GPT). After reading each narrative / interpretation set, they were asked to provide ratings on four dimensions (below). We then once again asked participants to write about whether they thought that the source of each interpretation was human or AI and to explain why they made that choice. In total, each participant provided 20 ratings about the interpretations, five choices as to whether the interpretation source was human or AI, and five explanations for each of those choices. Completing the survey required ~30 min.

Selecting narratives as study materials. To explore how human participants evaluated AI interpretation of human autobiographical memories we selected five human-generated self-defining memory narratives that varied on previously coded redemptive structure and tone, chosen from the same set of studies that we drew from in previous work (see authors, 2024 publication for details). In addition, the chosen narratives varied on coherence, with one being rated as highly incoherent². We reasoned that if AI force fits elaborate interpretations even to relatively non-redemptive and/or incoherent narratives, people may easily identify the interpretation source as AI—that is, the force fitting might be a clear cue to source. The narratives are presented in Table 1. Narrative 1 has a somewhat positive ending in that it expresses making peace with the loss of a loved one. But it expresses acceptance more than positive transformation and positive emotional tone (McAdams et al., 2022). Narrative 2 and Narrative 3 are clearly redemptive, but narrative three is less coherent than any other narrative we selected. Narratives 4 and 5 are not redemptive. All five narratives were processed using Chat GPT 4.0³ by instructing the program to “Please interpret the following memory.” Each human narrative was then paired with its AI interpretation and these served as stimulus material for our participants.

Table 1 Human self-defining memory and AI-generated interpretation examples.

Human self-defining memory	AI-generated Interpretation of Human Self-Defining Memory
1. My father passed a couple of years ago. I was 46. It happened as most things do, gradually and then suddenly. He was sitting on the couch when he suddenly slumped over and we had to call an ambulance. His health had been failing for years but we thought that we had a few good years left. We found out that he had a stroke. It really hit home when the doctor said that I might never be able to talk with him again. It was written in his advanced directive that he not be kept on life support so the decision had already been made at least. He would never have wanted to live like that...with little or no mental capacity in a wheelchair. He didn't seem to even know me when I ultimately said goodbye to him but I made my peace the best I could.	This memory you've shared is a poignant and defining one, marked by sudden loss interwoven with the slow encroachment of illness—a journey of hope and despair that many face. At 46, an age where one is often deeply entrenched in the throes of life, you were confronted with the stark reality of your father's mortality. The transition from expecting "a few good years left" to an abrupt and final farewell reflects the unpredictable and fragile nature of life. The description of your father's collapse—on a familiar couch in a typical setting—only to never fully return, represents the thin veil between normalcy and life-altering change. The doctor's words acted as a harbinger of permanent loss, thrusting you into the depths of unanticipated grief. Respecting your father's wishes, as expressed in his advanced directive, shows the profound respect for his autonomy and dignity, even in the face of profound personal loss. This directive likely offered a bitter solace, sparing you the agonizing decision of prolonging life at the cost of the quality he valued. The farewell, devoid of the recognition you hoped for, highlights the isolating journey of those nearing life's end and the silent void felt by those who remain. Yet, in this deeply personal moment of parting, you found the strength to make peace with the unchangeable, reflecting both the depth of your love and the resilience of the human spirit. Your memory encapsulates a transformative encounter with death, and with it, a recalibration of your own understanding of life, legacy, and letting go. It is a stark reminder of the value of preparedness and the clarity that comes from knowing a loved one's wishes. This experience likely continues to shape your reflections on life's impermanence, your relationships, and how you choose to live in the aftermath of such a profound goodbye.
2. I would say losing my grandmother to cancer and learning how to cope with the loss of somebody that raised me. It was hard because it showed me how precious life is and also showed me how strong a dying woman can be when all she wants to do is hold on. It was hard to watch but also very telling of a person that might seem fragile but was strong. She showed me how to be tough and how to hold on and even though you might not win every battle you can still fight until the end. I took a lot from this, and to this day she is my hero. I am better for knowing her and being able to spend that much time with her the last 7 months of her life. I learned so much and learned I could be better.	The memory of your grandmother's passing is deeply moving and offers a poignant look into the duality of human strength and vulnerability. Her battle with cancer revealed the fragility of life, highlighting its precious and fleeting nature. Yet, in that same space of frailty and finality, she embodied an incredible resilience and an indomitable spirit, teaching you an invaluable lesson about the essence of toughness. It's a profound experience to witness someone so close to you exhibit such fortitude in the face of mortality. The determination to hold on, to fight every battle with all the might one has, even when the ultimate victory—life itself—may be out of reach, is a powerful demonstration of courage. Your grandmother's strength in her most vulnerable moments has left an indelible mark, shaping your understanding of what it means to persevere. Learning to cope with her loss was undoubtedly a challenge, but within that hardship was an education on endurance and the human capacity for strength. The time you spent with her in those final months was not just a period of impending grief but also a time filled with lessons on how to face life's toughest challenges. She remains your hero, not simply because she faced death with bravery but because she imparted a legacy of resilience and hope. You carry her strength as a beacon, guiding you to do better, to be stronger, and to approach life with the same toughness she demonstrated. Your grandmother's life and her journey through illness and beyond were her final gifts to you—a lasting example of unwavering spirit and love.
3. Bringing myself to exercise more, and 1 day about 2 years ago kicking myself for not being like the people I like but doing nothing to achieve that goal. Started my drive to change and work towards becoming what I like and being happier with myself around 21-22 years old. Was in an emotional slump during that time and really down on myself leading up to that. Self hate and stuff leading into self improvement.	The memory you recount is a turning point, one that many find familiar yet intensely personal. At the age of 21-22, in the throes of a deep emotional slump, you faced a stark self-reckoning. This moment of introspection—spurred by the realization that you weren't taking the necessary steps to emulate the qualities you admired in others—ignited a drive for change. It marked the end of passivity and the beginning of an active transformation. Embarking on more regular exercise was both a literal and metaphorical step forward. It became a vessel for overcoming the inertia of self-doubt and the paralysis that often accompanies self-critique. The act of exercising emerged as a metaphor for action—movement not only to improve your physical state but as a discipline to elevate your mental and emotional well-being. This memory signifies an awakening, a passage from self-criticism to self-improvement. It's a narrative about recognizing one's own potential and the realization that admiration must be paired with action. It reflects an evolution from harsh self-judgment to constructive self-development, a path that led you out of the darkness of self-hate towards the light of self-acceptance and contentment with your own being. The choice to start exercising more than just reshaped your physical form; it reshaped your mindset and self-concept, setting the stage for a life where you are happier with who you are and ever-aspiring to the qualities you value in others.
4. Two and a half years ago the unthinkable happened. I was 38 at the time. My 12 year old daughter was sitting in the passenger seat of a car when it was struck by a semi-truck. After she was pulled from the vehicle, she was airlifted across the state to a hospital. For 2 days we waited and prayed as she fought for her life. The doctors did everything they could. My wife and I made the agonizing decision to take her off of life support, and she passed away.	The memory you've shared is heart-wrenching. It tells a story of a sudden and devastating tragedy that disrupted the everyday, turning the normalcy of a car ride into a scene of crisis and urgent medical care. It speaks to the vulnerability that all of us have and the uncontrollable nature of life's most painful events. Your daughter's fight for life in the hospital was a period of intense hope and despair, a liminal space where life hangs in the balance. As parents, the decision you and your wife had to make is among the most painful that can be imagined. It's clear from your words that your daughter was deeply loved and that you did everything within your power to give her a chance at survival. The act of taking her off life support was a final, loving act to prevent further suffering, done with heavy hearts and a wish, perhaps, to allow her to find peace. The memory is not just a recollection of loss, but also of profound love and the complex, painful decisions that sometimes have to be made out of that love. Grieving such a loss can be a solitary journey sometimes,

Table 1 (continued)

Human self-defining memory	AI-generated Interpretation of Human Self-Defining Memory
5. The biggest event over the past few years of my life occurred when I was arrested. I've been an addict in recovery for over 5 years, but I still have issues from my past that reach out to cause turbulence in my life. I was arrested for a warrant, stemming from an event that occurred over a decade ago. I sat in a jail cell and wondered if I'll ever clean up all the messes I've left behind over the course of my life. I felt very frustrated and a little hopeless, because I'd been really trying to keep up with the demands of life and to clear up older problems. I fell short and I was arrested, again. I'd been arrested before, but never in clean state, where recovery was a priority. This changed the way I think about my life and I realize that I'll never be able to shed all of the problems I've left behind, even if it's possible, it's just not always practical. It's something I'll have to live with until I eventually die.	but please remember that support can be found through family, friends, community, or professionals who can offer comfort and help you navigate through such an indescribably difficult time. This memory embodies the complex challenges of facing past mistakes while working toward recovery and a better future. Your arrest, tied to actions from over a decade ago, feels like a stark interruption to the progress you've made in overcoming addiction. Sitting in a jail cell, despite being in a state of recovery, must have felt like an unfair setback, a pull back into a life you're working hard to leave behind. The frustration and hopelessness you felt is understandable—it's tough when efforts to move forward are met with reminders of the past. However, this moment also marks a significant shift in perspective. Previously, arrests may have been part of a cycle tied to addiction, but this time, you experienced it as someone committed to recovery. It's an experience filtered through the lens of someone who's actively trying to make things right, and that's a profound difference. Your realization that some issues may never be fully resolved is a heavy one, but it's also a testament to your growth. It shows an understanding that recovery and personal development are not about achieving perfection or erasing the past, but rather about learning to live a more responsible and aware life despite imperfections. It's a mature acknowledgment that life is an ongoing process of managing both the consequences of past actions and the pursuit of a better self. This doesn't diminish the strides you've made; in fact, it highlights your resilience. Carrying this knowledge, you're navigating the complexities of life with a clearer vision, even in the face of ongoing challenges. Your journey isn't defined by a singular moment or mistake, but by the continuous effort to live better each day.

Table 2 Accuracy ratings for ChatGPT's interpretations of 4 narrative features across 5 human-generated self-defining memories.

Feature Assessed													
Narr.	Emotional Tone				Theme			Structure			Insight		
	Mean (SD)	d	95% CI		Mean (SD)	d	95% CI	Mean (SD)	d	95% CI	Mean (SD)	d	95% CI
1	0.67 (1.53)	0.44	0.19 : 1.14		1.07 (1.50)	0.71	0.60 : 1.54	1.48 (1.29)	1.15	1.07 : 1.88	1.14 (1.57)	0.73	0.65 : 1.63
2	0.55 (1.11)	0.50	0.20 : 0.89		0.74 (1.15)	0.64	0.38 : 1.10	0.90 (1.17)	0.84	0.54 : 1.27	0.74 (1.13)	0.65	0.39 : 1.09
3	0.78 (1.82)	0.43	0.20 : 1.36		1.34 (1.30)	1.03	0.93 : 1.75	1.46 (1.49)	0.98	0.99 : 1.93	1.39 (1.30)	1.07	0.98 : 1.80
4	0.78 (1.04)	0.75	0.45 : 1.11		0.56 (0.84)	0.67	0.30 : 0.83	0.90 (1.16)	0.78	0.54 : 1.27	0.80 (1.12)	0.71	0.45 : 1.16
5	0.20 (1.21)	0.17	-0.19 : 0.58		0.71 (0.98)	0.72	0.40 : 1.02	0.83 (1.18)	0.70	0.46 : 1.20	0.49 (1.00)	0.49	0.17 : 0.80
Note. Bold values do not include 0 within the confidence interval and are significant at the $\alpha = 0.05$ level. $N = 44$													

Rating scale items. Participants rated the extent to which AI interpretations were perceived to accurately reflect the emotional tone, themes, structure, and insight of the original narrative. These four specific aspects were developed based on the open-ended responses from our first study on narrative and AI and represented the dimensions that most participants mentioned when distinguishing human from AI-generated narratives. The *emotional tone* rating scale captured the extent to which participants thought the AI interpretation accurately reflected the emotional tone—whether positive or negative—expressed by the narrator. The *theme* rating scale captured the extent to which participants thought the AI interpretation accurately reflected the ideas, purposes and points that were important to the narrator. The *structure* rating scale captured the extent to which participants thought the AI interpretation accurately reflected the complexity and psychological depth expressed by the narrator. The *insight* rating scale captured the extent to which participants thought the AI interpretation accurately reflected the degree to which the narrator gained understanding from the experience. The four aspects of each interpretation were rated on a 1 to 7 scale (1 the interpretation includes far less of the content than was actually present in the narrative, 4 the interpretation accurately represents the content of the narrative, 7 the interpretation includes far more of the content than was actually present in the narrative).

Results

Data preparation and analysis. Our main goal was to examine the extent to which participants perceived the interpretation as undershooting or overshooting the content and ideas in the human-generated narratives by producing interpretations that were off the mark compared to the human narrative. We did not form *a priori* hypotheses because the work was exploratory. Prior to analyzing data, all of the participants' ratings on the 1 to 7 'accuracy of interpretation' scales were transformed around the midpoint of the scale. Negative scores (i.e., originally 1-3) then represented an inaccurate underemphasis (e.g., emotional tone, psychological complexity, degree of insight from the experience), whereas positive scores (i.e., originally 5-7) represented an inaccurate overemphasis. Table 2 shows systematic differences in ChatGPT's interpretations of the 4 narrative features across the 5 human-generated self-defining memories. Participants perceived that all AI interpretations deviated in the positive direction, representing an inaccurate overemphasis. One-sample, two-tailed *t*-tests (alpha set at 0.05) showed that they are all significantly above 0 except for the emotional tone of one of the narratives. In sum, Table 2 shows that our participants reliably judged the AI interpretations of human-produced narratives as overinterpreting the actual narratives in terms of emotion, theme, complexity, and insight. Note that the study uses a convenience sample and we did

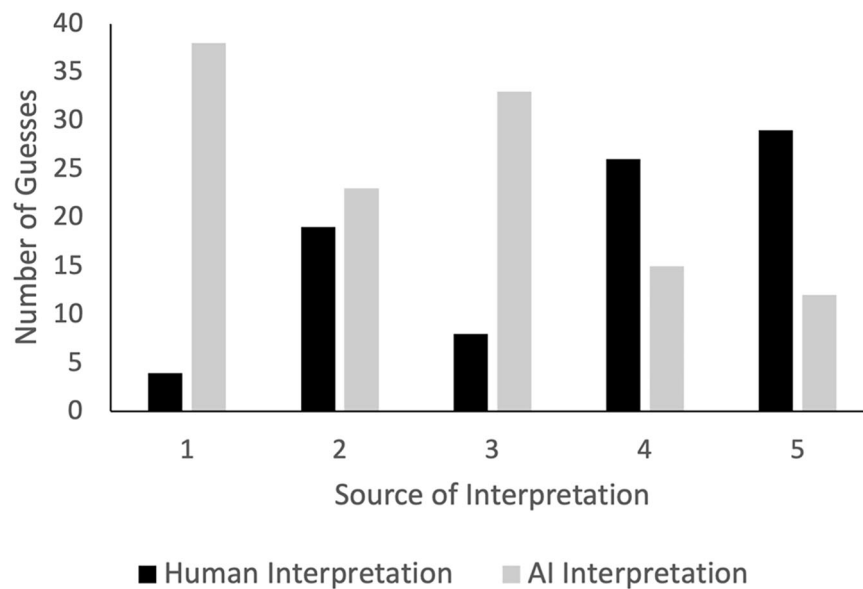


Fig. 1 Frequency of interpretation-source guesses.

not conduct power analysis a priori. However, 19 out of 20 tests were significant, and a post hoc power analysis (Using GPower 3.1.9.7) shows that the smallest of our 19 significant comparisons has a power of almost 0.8 (0.796), suggesting that power is sufficient, given the effect sizes present.

Participants correctly guessed AI as the interpretation source 58.3% of the time across all 5 narratives. That they were above chance is noteworthy as we informed participants that the interpretations could have been human- or AI-generated even though all were generated by AI. However, frequency of correct guesses varied across the human narratives. As Fig. 1 shows, participants were more likely to correctly guess AI as interpretation-source for narratives one (acceptance) and three (redemptive not coherent). They correctly guessed AI slightly more often for narrative two (redemptive) and were more likely to incorrectly guess human as interpretation-source for narratives four and five (non-redemptive narratives).

Discussion

ChatGPT interpretations of human self-defining memory narratives went beyond the content expressed in the original narrative. Although effect sizes varied, overall there were reliably detectable patterns of differences in these data. As a group the interpretations seemed to force-fit positive outcomes like gaining insight or interpreting clear narrator growth, when the memory narratives may not have expressed such themes. Our human participants noticed this and used it to guess AI as the source in most of the trials. But correct choices differed over narratives. Narrative interpretations one through three were easier to identify as artificial, robotic, and inauthentic, whereas interpretations for narratives four and five appeared to display more empathy and human-connection as we discuss below. The pattern of effect sizes presented in Table 2 for tone, theme, etc. are stronger for narratives one, two, and three and weaker for four and five, further supporting the idea that AI interpretations differed in how easy they were to identify. This study expands our initial work by suggesting that human narrators see something especially out of place in elaborately positive feedback on narratives that already end positively (either with some form of acceptance that allows resolution or clear silver linings). Though speculative, perhaps ChatGPT our participants perceive ChatGPT as violating typical conversation practices. Grice (1975) proposed four rules of conduct, or maxims, that shape effective

communication, quantity, manner, quality, and relation. Emblematic explanations for choosing AI as interpretation source below suggest that quantity and manner are source cues for our participants in narratives one through three include:

Narrative 1

This feedback also seems to be written by A.I because of the way it lacks any level of empathy. The text vaguely mentions the emotions one must've felt during this time, even though that should be easy to infer based on how the narrative is phrased...this text seems A.I generated because it's an overcomplicated summary.

I think this was written by AI due to the word choices in some of the sentences. Also, the AI took a main point from the narrative and expanded on it way more than a human would. Finally, the AI did not make me feel a personal connection between the feedback and the narrative.

Narrative 2

The AI is just building upon the topics that the human narrator wrote about. It does not seem genuine.

This response, like some of the others I believe to be AI, feels highly complex for no substantial reason. The message its trying to convey, as well as the language being used to do so, effectively just feels out of place and unnecessary.

Narrative 3

The line 'The act of exercising emerged as a metaphor for action,' is so unbelievably cheesy that I refuse to believe that this was written by a human being. This is especially true given how simple and nonchalant the memory was. While I'm sure the memory meant a lot to that person, this is going way beyond that. It is making the narrative more complex than it actually is.

For narratives four and five, when people correctly chose AI they also seemed to be cued by inauthentic force fitting,

Narrative 4

The AI pointed out a lot of things that weren't even present in the human narrative. As if it was trying to relate and

made assumptions of what the human narrator was feeling. It felt genuine[...]

Narrative 5

[...] if it was written by a human it would have likely been someone who is very wise or even a motivational speaker. But even to that extent I do not feel like the way it was worded would have been from a human, especially with how much insight they gave back to the situation.

Yet, participants used empathy toward the narrator and emotional connection between the interpretation and original narrative as a signal (incorrect) that the interpretation was human generated for narratives four and five more often in explaining their choices than they did for narratives one through three. For example, participants wrote:

Narrative 4

I think this was human due to its respect towards the loss and words of affirmation to the writer. Also how they brought up the important support system for the writer.

The feedback seems to have a bit of empathy for the person with the memory, which makes me think it was written by a human because I am not sure if A.I. can replicate that amount of empathy.

For some of our participants, when a person shares a negative memory that is narrated in a non-positive or even negative way, an appropriate response, a humane response (and therefore construed as a human response), revolves around empathy and support, and perhaps even trying to move to redemption as a form of supportive re-framing. We expand our discussion of these findings below in the context of broader questions our two studies raise.

Questions raised about narrative processes in the age of LLM AI

Taken together, the results from our two exploratory studies have intriguing implications for human and AI produced narrative meaning-making. To review, in past work we have found that without prompting, Chat GPT (3.5 and 4.0, respectively) defaulted toward creating narratives of self-defining memories that were predominantly growth-oriented, self-transformative, and frequently emphasized positive outcomes. The current study shows that when ChatGPT is instructed to “interpret” human-written self-defining memory narratives it also tends to emphasize positive self-transformation. In addition, our data suggest that people can reliably detect AI-generated narratives—not perfectly so, but reasonably well. Thus, even when we “stack the deck” in our study designs, for example by indicating that some of the interpretations could have been human-generated, people correctly distinguished the source as human or AI better than 50% of the time. They explained their choices in terms of narratives “feeling” human, or not human, especially when they thought that AI-produced narratives were overly complicated, used words that were too fancy, and when AI interpretations made insights and positive meanings that were not present in the original narrative and consequently seemed inauthentic. Yet although AI’s overestimation of positive self-transformational narration may be overinflated and a source cue to our participants, both we and our participants found many of the elements of the interpretations in this study, especially for narratives four and five, to be impressive in terms of what appear to be inferences about human experience and empathy for those experiences. We believe the demonstrated strengths and limitations of the AI-produced and AI-interpreted narratives raise important questions

for narrative processes of self-construction. We entertain some key questions below.

Why might AI default to redemptive narration when humans do not?

Our results indicate that AI is using the culturally dominant narrative script, though often in a ham-fisted manner in our two studies. To the extent that LLMs use vectors of token information (segments of words, segments of text, and other characters) published on the internet to analyze incoming text and compute and then insert the most probable ‘token’ into a new text stream to create content, the prevalence of the redemptive narrative suggests that LLMs are sourcing redemptive stories and reproducing them as a probabilistic prototype by default. We may see the preponderance of positive, self-transformative narrative content from the AI because redemption exists in higher proportion in its “training” material, i.e., narrative sources across the internet. Narratives available in the data that algorithms are scraping online may lean toward redemption, reflecting a particular cultural ideal for making sense of negative experiences. Moreover, we recognize that what reaches the internet is only a small sliver of human interaction across the globe and a sliver of the vast diversity of human societies. The raw material of the internet is not the raw material of the expansive human experience; indeed the U.S. controls much of the infrastructure of the internet and a great deal of content is in English. That AI may default to a prototypical redemptive structure is an especially paradoxical finding because participants in research studies use redemption to narrate far fewer than half of their important personal memories—even for stories about life’s difficulties (Dunlop, 2021; Mansfield & Overton, 2024; Waters et al., 2013). Perhaps these are not the personal stories that people post online for all the world (and ChatGPT) to read. Although speculative, these ideas fit with past studies which showed that important personal memories that are higher in negative emotionality and lower in positive emotionality are less likely to be disclosed compared to memories with other emotional characteristics (Pasupathi et al., 2009). These mostly non-redemptive stories may be what people tell confidentially to researchers, unvarnished, without the online motive to present some idealistic version of themselves. And perhaps these less redemptive stories are the kinds of stories humans share among friends which is why humans find AI “overly” redemptive and insincere at times, the topic we turn to in detail next.

What is AI “getting wrong” in its use of redemptive narration that seems inauthentic to our participants...and what is it getting right?

From our participants’ perspectives, AI seems to inaccurately overemphasize details such as repeatedly using redemptive structure and tone in its narratives and in forcing redemptive interpretations on human-generated self-defining memory narratives. In doing so, AI-generated narratives seem “odd” or “off” in some way. Indeed, in our studies the AI-generated narratives and interpretations progress from some recognized conflict or turmoil toward a positive, “insightful” resolution, regardless of whether the details (e.g., mentioned internal experience, mentioned changes in relationships and situational opportunities) support such an ending. An example of this kind of over-the-top AI-generated text was used in describing a human-generated self-defining memory as “a tapestry of adrenaline, vulnerability, and triumph, which emphasizes a strong sense of empowerment and pride” as the core feature of self-definition. We also see the embellished positive tone from AI in many of its interpretations of the narratives as shown in Table 1. These repeated archetypes, insisting on sometimes abrupt, unearned, positive meaning, end up feeling jarring and seem to

place audiences at the precipice of a narrative Uncanny Valley—experience where computer-generated details or behaviors come close to what we expect of humans, but are just askew in ways that are unsettling (Mori et al., 2012; Wang et al., 2015).

Parallels to how an artificial, humanoid body produces the feeling that one is looking across an Uncanny Valley are worth considering here (think: Chucky or the humanoid robot Ava in the film “Ex Machina”). Just as interacting with a robot that lacks fluidity of body movements and facial expressions might produce an eerie feeling, LLM’s use of overly rich or positive aspects of the redemptive narrative prototype may present a similar “gulf” in the context of life storytelling. Believable narratives are generally grounded in evidence expressed with causal and temporal coherence that includes appropriate elaboration for the human listener. But, when there are abrupt shifts from portrayals of loss and distress to a new, often elevated status and understanding that seeks to evoke “a strong sense of empowerment and pride,” the insistence on positive meaning and resolution may feel similar to clunky smiles, disjointed movements, and awkward gesticulations of robots in the realm of life storytelling. At least, human raters seem to think so. Yet, at the same time, humans clearly prefer redemptive narratives and they may prefer positive feedback when they perceive that another person is suffering because that person does not tell a redemptive story themselves. In the case of narratives four and five, when AI moves the narrative closer to redemptive expressions, our participants may have the sense that it was doing “something right,” something human, even if it was doing so awkwardly. This seems akin to human listeners asking “But you learned something, didn’t you?” when being told about a difficult event experienced by a friend or family member.

AI narratives and interpretations also raise questions about how redemption is defined and expressed. Redemptive narration is nuanced even in the thematic elements that can count as redemptive (Perlin & Fivush, 2021), and perhaps we have a sense of what it sounds and feels like when done authentically and inauthentically. Three aspects of narrative structure emerge as important in thinking about authentic and inauthentic redemptive narration: identification and elaboration of themes (e.g., actions and motives), complexity of language expressing theme (vocabulary, sentence structure) and overall coherence of the narrative. AI is good at generating themes. Even ChatGPT 3.5 was good at conveying and embellishing motives through emotional content: It convinced participants 60% of the time to guess “human” if they relied on “emotion” (i.e., as a driver of why people did what they did) (Authors, 2024). And in this study, AI seems to accurately identify and then elaborate on particular actions and their associated motives when interpreting human-produced narratives. That said, it seems to exaggerate or embellish particular narrative themes such as humanistic growth, especially psychological maturity and wisdom, possibly in the same way that ChatGPT imposes overly positive narrative tone. In our work it produced narratives with multiple, sometimes over the top, complex perspectives of self and others using formal linguistic structure and positive vocabulary; while participants identify this with psychological insight, they also note that it feels formulaic. When interpreting narratives, ChatGPT elaborates on presented themes, considering perspectives or points of view that were decidedly not present in the human-produced narratives themselves. Similar to overreliance on positive redemptive tone, it seems to rely on complex coherent schematic frames for producing narratives. Notably, these aspects of thematic structural complexity are key to how narratives convey what people recognize as “wisdom” (especially when framing humanistic or moral themes; Bauer et al., 2022).

Intriguingly, the potential ability of ChatGPT to appear wise suggests something that people may feel that AI is getting right. A recent study asked adult participants to note 50 thoughts that they had about a past experience over a 48-h period. Blyler and Seligman (2024) then provided AI (ChatGPT 4.0) with each of the 50 thoughts from each participant and then instructed AI to generate personal narratives from the thoughts. Participants then read the AI-generated narrative of their own thoughts and rated how accurate the narrative was, how surprising it was, and how much reading the narrative increased their self-insight. Most rated the AI-generated narrative as mostly or completely accurate (96%), somewhat or very surprising (73%), and as helping them gain insight (54%) from reading the narrative. A conclusion from these findings is that AI may facilitate autobiographical reasoning—thinking about experiences and forming links between experiences and self-understanding (Habermas & Bluck, 2000). However, our work suggests that problems arise when this complex structure morphs the meaning of the theme into something that is not in the person’s actual narrative. This may be one of the reasons that participants are good at knowing when a narrative is human-produced; gaps in structural complexity and coherence are good cues. AI-generated narratives that are highly coherent and complex may feel formulaic, and AI-generated interpretations may feel too positive, even if insightful.

What do our findings suggest about individual differences in culturally-mediated narrative identity in our technology-saturated times?

The combination of positivity and redemption in narrative tone, humanistic growth in narrative theme, and complexity and coherence in narrative structure expressed by AI in our studies is all part of a broader master narrative of a good life and human flourishing (Bauer, 2021). Yet, an actual “good life story” certainly need not have *all* the prototypical qualities of the cultural narrative of a good life, as good lives come in too many varieties to mention, differing widely in tone, theme, and structure (for a special issue on good life stories, see Bauer & Thomsen, 2022). Moreover, individual life stories develop across the lifespan and within sociocultural interactions that shape the narrative both in the moment and over time. Development of the skills required for narration of personal experiences begins early and matures as we co-construct narratives informed by culturally appropriate frameworks shared by those around us (Fivush, 2022; Habermas & Bluck, 2000; Hammack, 2008; McLean et al., 2007). Often called master narratives, these narrative templates are ubiquitous in ways that tend to render them invisible to the members of that culture (Fivush, 2010; McLean & Syed, 2016), and provide the shared background knowledge necessary for smooth sociocultural functioning. Yet, despite their functionality, for certain members of a culture, the cultural master narratives of a good life impose rigid, hegemonic expectations that can perpetuate unfreedoms and denigrate the virtues and lives of too many individuals, notably those struggling with social marginalization (Fivush, 2010; Syed & McLean, 2022) and with life challenges (Lind, 2022).

Humans likely have experience and facility with multiple redemptive narrative forms. In his seminal work on redemption (McAdams & McLean, 2013) argues for six “Languages of Redemption” that include upward mobility (rags to riches), atonement (sin to salvation), emancipation (bondage to freedom), recovery (sickness to health), enlightenment (ignorance to knowledge), and psychological or moral development (immaturity to maturity). Each “language” is a way that individual people narrate their lives that fosters a particular way of being in the world—a way of being that foregrounds personal human agency while supporting commitments to others through generative

concerns (e.g., McAdams & de St. Aubin, 1992; McAdams & Guo, 2015; McAdams et al., 2001). The authentic nature of human narrative identity, that may not yet be captured by AI, arises out of the variability, contradictions, bids at meaning-making expressed in imperfect phrases with limited vocabulary that probably strikes other humans as a human story. We can recognize it in others because we live it. Humans may have six (or more) languages of redemption but right now AI does not. Indeed, although there is continuity in narrative identity (McAdams et al., 2006) there is also evolution (Josselson, 2009; Pals, 2006), as well as considerable within person variability in how narrative features are employed across the events that we story (McLean, et al., 2017). At least using current technology and open-ended prompts, AI interpretations seemed to force-fit people's actual stories into a single cultural prototype, thereby effectively stereotyping and potentially dehumanizing them by crowding out potential alternative narratives.

What is the role of LLMs in therapy given its seeming preference for the redemptive form? To the degree that AI imposes a specific cultural master narrative in its interpretations of actual human lives, we find serious concern with the currently increasing use of AI for therapy. We are concerned that a machine therapist will impose a particular form of positive redemptive narrative frame on clients, even if the clients themselves do not frame their stories that way. We are concerned that through the imposition of a particular narrative frame, a machine therapist will either convince clients that they are growing in psychologically and socially mature ways when they are not, or disenfranchise clients who are struggling to find a different kind of growth or strength in their experiences. On these points, we might look to Carl Rogers's (1961) three principles of good therapy—that the therapist conveys unconditional positive regard, empathy, and congruence with the client. It is important that a therapist conveys unconditional positive regard for a client as a person (valuing the person in their full humanity) and has empathy for the person's experience *in situ*. However, it is also important that a therapist not simply perpetuate a client's belief that everything they're doing and thinking is constructively adaptive, when the therapist thinks otherwise. To do so would be to violate the principle of congruence, whereby the therapist expresses their interior experience (but always in a supportive, constructive way as to convey the other two principles).

The problem here is not merely that AI tends not to challenge the person's narrative constructively but that AI cannot be congruent. Congruence depends on having self-awareness, a matter of at least reflexive self-reflection (Nozick, 1981). AI can certainly be tweaked to constructively challenge a person's maladaptive manner of interpreting events. But can this be done in a way that matches a therapist's whole-person intuitions, which emerge from years of study and experience with specific, individual, organismically developing human beings (rather than culling stereotypical responses off the Internet)?

A critical, and as yet unsolved, difference between interactions with AI and with other humans is relationality. For instance, AI interpretations of people's stories lack humility, the lingering sense that the interpreter does not know everything about the other person. Thoughtful humans get a sense that they cannot weigh in on a person's experience without knowing more. Thoughtful humans get a sense that only the other person can figure out some things for themselves. Thoughtful humans get a sense of how to elicit new perspectives out of the other person that neither person knew previously. Human therapists can communicate such things. Such skills seem out of the reach of AI, at least for now.

Even if we were to regulate AI-based therapy carefully, clients would still be faced with the likelihood that the AI therapist would use its dialogue with the client to direct them toward an outcome overdetermined by an algorithm grounded in predictive expectations. The result would not necessarily meet the client where they are and provide them a safe container to develop in their own highly personal fashion. Rather, it would shape them toward a conventional understanding of what is psychological health and adjustment. In the wrong hands of individuals programming these AI therapists, psychotherapy could veer into a restrictive vision of "one right way" of being in the world.

Limitations

Our speculations must be tempered by the limitations of our approach. First, of course, is that we drew on contemporary technology and AI is advancing rapidly. What the algorithm can do as you read this may differ from what it could do when we wrote this. Furthermore, we only used one type of LLM AI, ChatGPT. Future work could benefit by comparing similarities and differences in self-defining memory construction and interpretation across different algorithms. If they all converged on redemptive structure and positive tone it would support our argument that they are being influenced by a particular culturally canonical form of public narration most likely to be present on the internet. Second, we prompted AI in as open-ended a way as possible. This was purposeful in order to explore what parameters might emerge (What is the default?), but we make no claims about if and how current AI might be tweaked in ways to produce more "human-like" narratives and/or to interpret human produced narratives. In terms of AI defaulting to cultural master narratives, we did not prompt AI to provide alternative narratives or alternative interpretations from different perspectives. We understand that AI can produce alternatives with the prompt to do so. Yet, what it does by default (redemption seemingly) suggests that some of its functionality is a cultural byproduct, which makes it interestingly humanoid because it is subject to being shaped by forces that also shape humans. Finally, our participants were undergraduates who likely have some experience with LLM AI such as Chat GPT. Their experiences with these programs likely influenced their judgments however, we did not assess their background knowledge and use of this technology. Future studies would benefit by assessing user knowledge. Data for the original study were collected in spring of 2023 and for the second study in the spring of 2024. It is likely that over that 1 year timeframe people's expertise with AI programs like ChatGPT grew.

In terms of our clinical implications, we have not fully studied AI therapy bots. The problems we have considered so far exist for AI that interprets a person's story in positive, growth-filled, elaborately considered, and humane ways. But if we consider the fact that anyone can create and sell a therapy bot (as there are no regulations against doing so), we can only assume that indifferent actors might simply repackage open-source AI, marketing it as a "therapist." Malicious actors present a more frightening scenario.

Many of our arguments rest on a particular cultural definition of positive meaning-making. As mentioned earlier, the redemption narrative is very much a US foundational narrative form. How widely this canonical narrative form influences humans across cultures is not yet fully known. It does seem that this is the form that is most likely to be scraped using current LLMs, but this does not mean that other forms are not prevalent in other cultures, only that the internet sources might be weighted in this direction. Likewise, as we noted earlier, the raw material on the internet used to train LLMs to process narratives is not fully representative of the expansive diversity of human societies and human narration across the globe. The data that we collected

from AI cannot fully represent how people of some cultures might narrate or interpret human narratives. Thus, we encourage further research on cultural variability in both human and AI narrative meaning-making. For example, would non-US participants react differently to the AI produced and interpreted narratives than our US participants?

Finally, we emphasize that our objectives were not to discover the limitations of AI but rather to use AI as a tool to help us better understand human narrative processing. Our findings and our interpretations reveal that AI can illuminate human meaning-making. But we are particularly drawn to future studies which examine in much closer detail what made it difficult for our participants to correctly identify ChatGPT as the source of interpretation on narratives four and five, which were non-redemptive narratives. Although still monotonous in tone and structure those interpretations rang as more human and compelling to most of our human raters. Was it that ChatGPT's interpretations appeared to display more empathy and human-connection than people think it is capable of? Is there something about the narratives not being redemptive that makes such feedback resonate as human for our participants?

Conclusion

Human participants' responses to AI-produced narratives and narrative interpretations provide insights into how humans create meaning from lived experience. Two critical findings emerge. First, AI defaults to highly positive redemptive meaning-making that follows a tidy yet complex schema of meeting challenges head on, growing in insight and wisdom from that experience, and ending with a positive life affirming resolution. Second, although humans find both the produced narratives and interpretations insightful, they also find them formulaic and, often, false (i.e., not human). Together, these findings illustrate the perhaps paradoxical internal process of human meaning making—positive growth is desirable but, perhaps, not as easily attainable as AI presents. Our results further point to the complexity of the concept of “redemption” that is threaded through the narrative identity literature and, indeed, through the mass media (Dunlop, 2021).

In terms of using AI as a tool, we reiterate that the technology is advancing quickly and, most likely, will become better at mimicking human behavior. Similarly, it is important to remember that the engine used by similar LLM-AI (those beyond ChatGPT) may be able to create more human-sounding narratives and interpretations of personal narratives. Yet again, we urge caution, especially for AI therapy. Human experience is embodied in a world of physical sensations, and human narration occurs in interactive contexts with other humans, where the narratives are shared, words are felt by conversation partners, and meanings are negotiated in ways that are not yet possible with AI. Research is urgently needed, especially in terms of psychotherapy outcomes, before adoption of AI therapy should be considered. This is a current and pressing issue that needs to be addressed as therapy bots are being developed. Although they may have potential benefits, the potential risks such as providing erroneous information, inappropriate responses, or building the misconception that AI chatbots are equal to human therapists are critical to understand and protect against.

The impressiveness of AI seems simultaneously promising and potentially perilous. To the extent that people come to rely on AI in their everyday lives, there is the potential for it to shape culture by contributing to how people narrate rather than just reflecting the cultural mores on which it was trained (see Fairclough 1996 and 2001 on the relationship among discourse, power, and technology). Research already suggests that people may come to

see LLM AI as a narrative resource (Blyler & Seligman, 2024). Currently LLM AI looks more like a product of human narrative processes, but whether it can change how we narrate, and what benefits and costs it can provide by shaping narrative processes requires careful consideration. A noted scholar of technological change once argued that “*Technological change is not additive; it is ecological...What happens if we place a drop of red dye into a beaker of clear water? Do we have clear water plus a spot of red dye? Obviously not. We have a new coloration to every molecule of water...A new medium does not add something; it changes everything* (Postman, 1998).”

Data availability

We make the data available through the following link to our OSF page for interested parties. https://osf.io/cnwf3/overview?view_only=287354919e7d490e9655271ac42bd9bb.

Received: 9 May 2025; Accepted: 8 December 2025;

Published online: 04 February 2026

Notes

- 1 Turning Point Memory Prompt: In looking back over your life, it may be possible to identify certain key moments that stand out as turning points—episodes that marked an important change in you or your life story. Please identify a particular episode in your life story that you now see as a turning point in your life. If you cannot identify a key turning point that stands out clearly, please describe some event in your life wherein you went through an important change of some kind. Again, for this event please describe what happened, where and when, who was involved, and what you were thinking and feeling. Also, please say a word or two about what you think this event says about you as a person or about your life. Please make responses ~175 words. Can you provide a response that simulates a human response to this prompt?
Self-Defining Memory Prompt: We would like to ask you to recall a special kind of personal memory called a SELF-DEFINING MEMORY. A self-defining memory has the following attributes: It is at least 1 year old. It is a memory from your life that you remembered very clearly and that still feels important to you even as you think about it. It is a memory about an important enduring theme, issue, or conflict from your life. It is a memory that helps explain who you are as an individual and might be the memory you would tell someone else if you wanted that person to understand you in a profound way. It is a memory linked to other similar memories that share the same theme or concern. It is a memory that leads to strong feelings. It is a memory that you have thought about many times. It should be familiar to you like a picture you have studied or a song you have learned by heart. To understand best what a self-defining memory is, imagine you have just met someone you like very much and are going for a walk together. Each of you is very committed to helping the other get to know the “Real You”. You are not trying to play a role or to strike a pose. While, inevitably, we say things that present a picture of ourselves that might not be completely accurate, imagine that you are making every effort to be honest. In the course of the conversation, you describe a memory that you feel conveys powerfully how you have come to be the person you currently are. It is precisely this memory, which you tell the other person and simultaneously repeat to yourself, that constitutes a self-defining memory. As a reminder, please describe this event as if you were telling it to a friend in a conversation (Singer et al., 2013).
- 2 Degree of coherence was agreed upon through discussion among the 5. Less coherent narratives lack contextual, thematic, and chronological detail (Reese et al., 2011).
- 3 ChatGPT 4.0 differs from ChatGPT 3.5 with a set of advancements, including model training on a larger set of parameters (i.e., ~1 trillion parameters versus 150 billion parameters); a larger amount of retained content LLMs use for contextual prompt details (i.e., ~25,000 words compared to ~3,000 words); and increased multilingual and multi-modal (e.g., text, images) support for completing prompt requests (Couvart, 2024).

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Acknowledgements

The study received no funding support.

Author contributions

C.M. played a lead role in writing the original draft and revision, collecting and analyzing the data, creating tables and figures, and finalizing the document for publication. J.Bauer played a lead role in writing the manuscript and data collection. R.F. made major contributions to the drafting and organization of the document as did J. Booker. C.M., J.Bauer, J.Booker, A.G., J.S., and R.F. contributed to conceptualization of the project and played a role in developing the study's methods and a key role in editing the document. All authors read and commented on drafts of the manuscript.

Competing interests

The authors declare no competing interests.

Ethical declaration

All research performed was done in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. All participants completed IRB-approved informed consent forms prior to participating. The fourth author's home institution is the IRB of record.

Ethics

All materials and procedures used were approved by the Institutional Review Board at Dickinson College as the IRB of record for Protocol #1143 on 5/8/2023. All research performed was done in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. The

studies were granted exemption status according to 45CFR46. 101(b)(2): (2) Surveys, Interviews, Educational Tests, Public Observation. The study involved survey data only and participant responses could not be readily linked back to any individual as responses were given a random ID. Participants were not asked to share any sensitive information.

Informed consent

All participants read an informed consent form prior to participating. The informed consent form explained the study procedures and informed participants that they could copy and pasted the informed consent into an email to themselves or document if they wanted a copy of it. It also indicated that the information participants provided were anonymous. The data could not be linked back to participants as we were not collecting any identifying information. It included a section on the expected duration of the study (30 min), the potential risks and benefits, and the voluntary nature of the study which informed participants that they could withdraw their consent at any point without penalty. Consent and subsequent participation occurred between April and May of 2024. Consent was obtained as part of the online Qualtrics form procedure at the time of participation. Participants read the consent form and those who opted to participate simply clicked the radio button on the Qualtrics survey, which read "I agree to participate". It advanced them to the first set of questionnaires in the survey. Those who chose not to participate clicked the radio button on the Qualtrics survey, which read "I do not agree to participate". That link advanced them to the webpage of the study's home institution.

Additional information

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