

RESEARCH ARTICLE

The autobiographical fluency task: Validity and reliability of a tool to assess episodic autobiographical memory and experience-near personal semantics

Matilde Conti^{1,2} | Alice Teghil^{1,3} | Maddalena Boccia^{1,3} 

¹Department of Psychology, Sapienza University of Rome, Rome, Italy

²PhD Program in Behavioral Neuroscience, Sapienza University of Rome, Rome, Italy

³Cognitive and Motor Rehabilitation and Neuroimaging Unit, IRCCS Fondazione Santa Lucia, Rome, Italy

Correspondence

Maddalena Boccia, Department of Psychology, "Sapienza" University of Rome, Via dei Marsi, 78, Rome 00185, Italy.

Email: maddalena.boccia@uniroma1.it

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Abstract

The assessment of autobiographical memory is challenging in clinical settings. The Autobiographical Fluency Task (AFT) – that is designed to test both Episodic Autobiographical Memory (EAM) and experience-near Personal Semantics (enPS) – may represent a feasible and rapid method to test access to autobiographical memories. Here we tested the reliability and the construct validity of the AFT. A total number of 51 individuals participated in the present study, with 24 included in Experiment 1 and 27 in Experiment 2. In Experiment 1, participants performed both the AFT and the Survey of Autobiographical Memory (SAM). In Experiment 2, participants completed the AFT and the Autobiographical Interview (AI). The AFT showed a moderate-to-high reliability. Also, EAM and enPS scores significantly correlated with the episodic subscale of the SAM. Results of Experiment 1 were replicated and expanded in Experiment 2. Again, the AFT showed a high reliability. Both EAM and enPS showed a significant correlation with the number of internal details produced during the AI; enPS also correlated with the number of external details. Overall, the present results show that the AFT may be a feasible instrument to assess autobiographical memory, especially for testing episodic autobiographical memory and experience-near personal semantics in clinical settings.

KEYWORDS

autobiographical memory, episodic memory, neuropsychology, semantic memory

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INTRODUCTION

Autobiographical memory mediates awareness of the self as continuous across time (Levine, 2004), thus allowing the development and maintenance of our unique personal identity and self-awareness. Autobiographical memory impairments are quite common in widespread conditions such as traumatic brain injury (Esopenko & Levine, 2017), stroke (Lim & Alexander, 2009), mild cognitive impairment, and Alzheimer's disease (AD) (el Haj et al., 2015; Meulenbroek et al., 2010). It is important to notice that in 2014, the Centers for Disease Control and Prevention (CDC) reported 2.53 million traumatic brain injury-related emergency department visits (Capizzi et al., 2020). According to a recent meta-analysis conducted on studies assessing memory impairment in patients with moderate-to-severe traumatic brain injury (TBI), several aspects of memory were found to be impaired in patients compared to controls. However, verbal recall, especially when tested after a time delay, is the most affected and sensitive domain to the effects of TBI (Vakil et al., 2019). In the European Union (EU), stroke affects approximately 1.1 million inhabitants every year, and it represents the second most common cause of death (Wafa et al., 2020). Multiple cognitive domains are affected after a stroke, with memory deficits representing around 25%–30% in the acute phase, with a lower prevalence in the chronic phase (O'Sullivan et al., 2023). Pathological ageing represents a major health problem if we consider that 4.7 million individuals worldwide are diagnosed with AD, and this estimate is projected to rise to 130 million by 2050 (Lopez & Kuller, 2019). Memory deficit is the hallmark of pathological ageing due to AD as well: during the first 10 weeks of the current year, 59 individuals referred to a university hospital in a large city for a first neuropsychological assessment, 49 of whom complained of memory problems, mainly concerning episodic memory. However, most of the neuropsychological batteries aimed at testing cognitive status in these samples of patients, such as the Repeated Battery for the Assessment of Neuropsychological Status (Randolph et al., 1998), the Milan Overall Dementia Assessment (Brazzelli et al., 1994), and the Mental Deterioration battery (Carlesimo et al., 1996), do not include tasks testing autobiographical memory deficit.

Actually, the assessment of autobiographical memory is challenging. The Autobiographical Memory Interview (AMI) (Kopelman et al., 1989) and the Autobiographical Interview (AI) (Levine et al., 2002) are the most widely used instruments to test autobiographical memory. In both, recollections are sampled across different life periods and scored according to standardized and reliable systems. The AMI tests episodic and semantic autobiographical memory separately, asking participants to report events occurred in specific periods or autobiographical facts. In the AI, participants are asked to describe the events in different conditions, namely free recall, general probe and specific probe; indices of semantic and episodic autobiographical memory are extracted from within a single narrative, which is unconstrained by the examiner. Participants' production is registered, transcribed verbatim and scored according to the standardized systems. However, this kind of task is time-consuming (it should be considered the time needed to administer, transcribe, and score the individuals' verbal production) and not always feasible in clinical contexts, in which different cognitive domains have to be tested, especially considering the neurological conditions mentioned above.

An alternative way to test autobiographical memory is represented by word-cue paradigms, such as the Crovitz test (Crovitz & Schiffman, 1974), in which individuals are required to recollect events related to specific cues. However, the uniqueness of the individuals' memories makes it difficult to develop an objective instrument to test autobiographical memory. For instance, the same cue may have different significance for different individuals.

The Autobiographical Fluency Task (AFT) (Dritschel et al., 1992), which requires to recall personal events and names of personally known individuals from different lifetime periods (see below), has also been used in different studies for research purposes (Piolino et al., 2010; Sheldon et al., 2016; Teghil et al., 2022; Teghil, Marc, & Boccia, 2021). In fact, from a theoretical perspective, an episodic and a semantic component should be distinguished in assessing autobiographical memory (Levine et al., 2002; Renoult et al., 2019). Episodic autobiographical memory (EAM) refers to the ability to recollect and re-experience events of our own life occurred at a particular time and place and to mentally project the self through time (Noulhiane et al., 2008; Wheeler et al., 1997). Semantic components of autobiographical memory involve factual knowledge related to the self,

that is derived from repeated experiences; they include autobiographical facts, self-knowledge, and repeated events (Grilli & Verfaellie, 2014; Renoult et al., 2012). There is also evidence for a further distinction between context-independent and context-dependent conceptual knowledge about the self. The former concerns traits, roles and beliefs, which are considered to be highly conceptual and abstract (e.g. I am a researcher; I am stubborn; Reading is fun) (Grilli & Verfaellie, 2014). The latter is tightly associated with a spatiotemporal context and derived from repeated individual episodes (e.g. I am a researcher at the Department of Psychology since 2019 and every day I reach the Department by car; I usually spend Christmas at my brother's place); thus, it may be considered particularly “experience-near” (hereafter, experience-near personal semantics or enPS). Experience-far personal semantic information, such as knowledge of roles and traits, is independent from the original context of acquisition and thus not linked to any specific time or place (Sheldon et al., 2020). Indeed, traits and roles are thought to reflect common elements across a large number of experiences characterized by variable spatial, temporal and social contexts; as such, they represent substantially abstract knowledge (Wank et al., 2022). Experience-near personal semantics, instead, is also derived from multiple experiences and lifetime events, but include general information concerning repeated events and repeatedly encountered individuals within a specific spatial and temporal context, thus representing a form of contextual knowledge (Dritschel et al., 1992; Sheldon et al., 2020). Neuropsychological evidence supports such a distinction between experience-far and experience-near personal semantics (Grilli & Verfaellie, 2016). Episodic autobiographical memory relies on a wide network of brain areas, including the posterior cingulate cortex, the parahippocampal gyrus, the ventromedial prefrontal cortex, the angular gyrus, and the anterior middle temporal gyrus, the temporal pole and the superior frontal gyrus (Boccia et al., 2019; Teghil, Bonavita, et al., 2021). Interestingly, experience-near personal semantics rely on a distributed network, including the ventromedial prefrontal cortex, the posterior cingulate cortex, the angular gyrus and the anterior middle temporal gyrus (Teghil et al., 2022). Instead, the left angular gyrus is associated with semantic autobiographical memory (Teghil, Bonavita, et al., 2021). These results suggest that a continuum actually exists between episodic and semantic autobiographical memory, which involves a dynamic remapping based on the task demands (Renoult et al., 2012).

Notably, semantic and episodic autobiographical memory can be differentially impaired in neurodegenerative disorders (e.g. Semantic Dementia, AD; Addis & Tippett, 2004; Duval et al., 2012). Thus, testing different dimensions of autobiographical memory would improve differential diagnosis. However, standard clinical practice is often constrained by temporal limits that may not allow to systematically test autobiographical memory. Nonetheless, systematic studies validating the AFT, and providing psychometric properties, are missing, even though this instrument may represent a feasible and rapid method to test access to autobiographical memories. Here, we aimed to investigate psychometric properties of the AFT, which can be conceived as a first-level screening procedure to be used routinely in clinical settings.

With these theoretical and methodological premises, we performed two studies. The first one tested the reliability of the AFT, based on the distinction between EAM and enPS, and its correlation with self-reported measures of episodic and semantic autobiographical memory. The second study assessed more deeply the psychometric properties of the AFT, testing the relation between enPS and EAM with indices derived from the AI.

EXPERIMENT 1

Materials and methods

Participants

Twenty-four individuals (14 females) aged between 23 and 33 years took part in this study. Participants did not report the presence of neurological and/or psychiatric disorders in their history. All participants

read and signed the informed consent. The study was designed following the principles of the Declaration of Helsinki and was approved by the Institutional Review Board of the Department of Psychology at the Sapienza University of Rome. Demographics are summarized in [Table 1](#). A sensitivity power analysis, performed to test the suitability of the sample size, showed that an effect size of at least $|\rho| = .51$ (large effect size) was required to observe a significant correlation at an alpha level of $p < .05$ with .80 power. Thus, effects smaller than $|\rho| = .51$ would not be reliably detected.

Procedures

Autobiographical fluency

The AFT used in the present study is inspired to the original test by Dritschel et al. (1992). Participants were asked to recall events (i.e. episodic autobiographical memories, EAM) and names of personally known individuals, such as schoolmates, friends, teachers and colleagues (i.e. experience-near personal semantics, enPS) from specific lifetime periods (i.e. 5–11, 11–14, 14–19 years of age, from 19 years of age to the last year and last year). For each condition in each lifetime period, participants were given 90 s to provide as many items as possible. The instruction emphasized that no detail was required; however, participants were encouraged to provide events occurring at specific times and places for the EAM condition (“Kiss at the swimming pool,” “Mounting John’s closet,” “Sighting of the dolphins” are examples of participants’ answers) and avoid reporting names of people belonging to more than one lifetime period (e.g. avoiding to report names of siblings or parents) in the enPS condition. If the presence of repetitions was suspected, doubts were cleared up with the participant after the end of task administration. For each condition, the score corresponded to the number of responses, excluding repetitions. After task completion, in order to ensure that participants had complied with instructions and that retrieved items were recalled from specific lifetime periods, for each retrieved item, participants were asked to report their specific age when the event happened/when the named person was met for the first time.

Survey of Autobiographical Memory

The SAM is a self-report inventory allowing to assess episodic autobiographical (SAM Ep) and semantic (SAM Se) memory, spatial memory (SAM Sp) and future thinking (SAM Fu). Individuals were asked to rate the extent to which each sentence reflected their own ability, using a 5-point Likert scale (Palombo et al., 2013). Weighted scores for each dimension were computed according to the procedure we obtained from the Authors.

Analyses and results

Data were analysed using *Jamovi* (Version 2.3.18.0; The Jamovi Project, 2022; R Core Team, 2021; Revelle, 2019; Singmann, 2018). Descriptive statistics are extensively reported in [Table S1](#).

TABLE 1 Experiment 1: Demographics.

	Sex	Age	Education
N	F	14	
	M	10	
Mean		27.1	17.0
Median		27.0	18.0
Standard deviation		2.81	2.27
Minimum		23	13
Maximum		33	21

Reliability of the AFT was tested by computing Cronbach's α , which resulted to be very high for EAM (Cronbach's $\alpha = .866$, McDonald's $\omega = .876$; Figure 1) and acceptable for enPS (Cronbach's $\alpha = .662$, McDonald's $\omega = .695$; Figure 2).

Pearson's correlation coefficients, along with their significance (two-tailed p), are summarized in Table 2. Both EAM and enPS were strongly correlated with SAM Ep, whereas enPS was only marginally correlated with SAM Se. Neither EAM nor enPS was significantly correlated with SAM Sp and SAM Fu.

Additional analyses are reported in Appendix S1.

EXPERIMENT 2

Materials and methods

Participants

Twenty-seven individuals (11 females) aged between 26 and 76 years took part in this study. Participants did not report the presence of neurological and/or psychiatric disorders in their history. All participants read and signed the informed consent. The study was designed following the principles of the Declaration of Helsinki and was approved by the Institutional Review Board of the Department of Psychology at Sapienza University of Rome. Demographics are summarized in Table 3. To test all periods in the AI (see below), we included also individuals aged above 33 years. All individuals performed within the normal range in the Raven Coloured Progressive Matrices test (Basso et al., 1987; Raven, 1986) and the Mini-Mental State Examination (Folstein et al., 1975; Magni et al., 1996; Measso et al., 1993). A sensitivity power analysis, performed to test the suitability of the sample size, showed that an effect size of

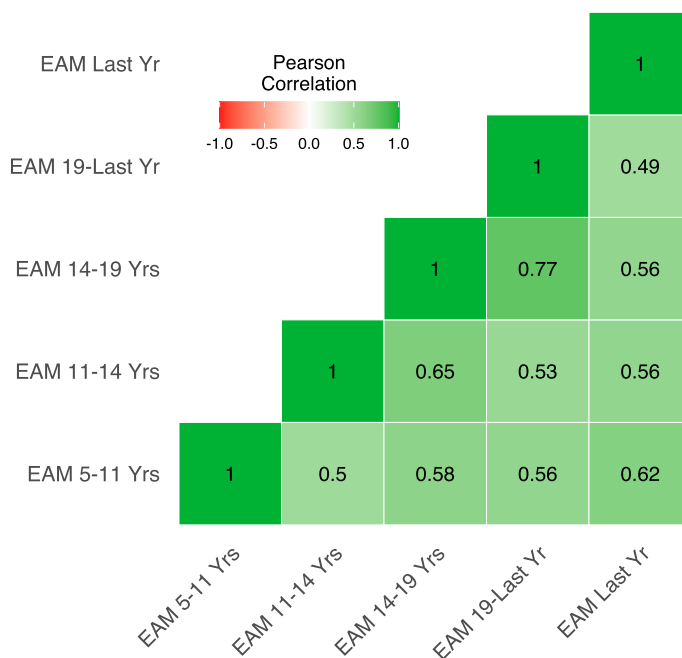


FIGURE 1 The heatmap reflects the Pearson correlation coefficients between different lifetime periods, probed during the episodic condition of the AFT of Experiment 1. AFT, Autobiographical Fluency Task; EAM, episodic autobiographical memory.

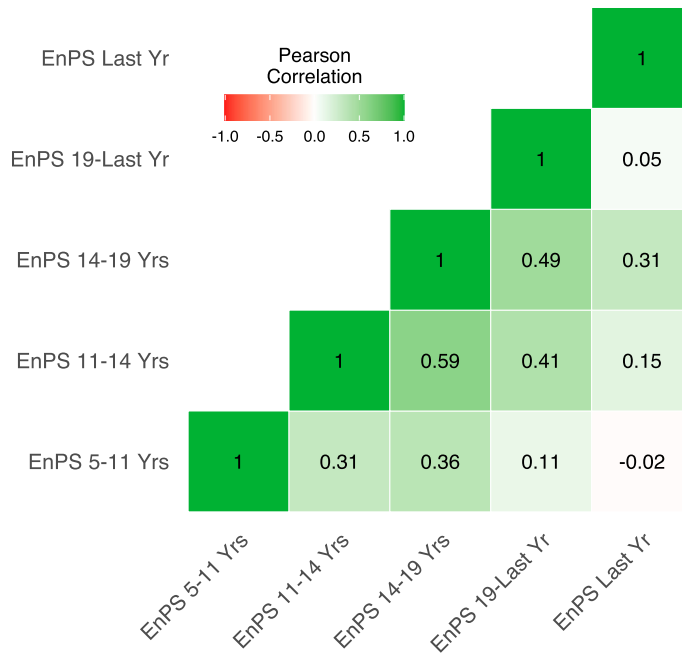


FIGURE 2 The heatmap reflects the Pearson correlation coefficients between different lifetime periods, probed during the enPS condition of the AFT of Experiment 1. AFT, Autobiographical Fluency Task; enPS, experience-near personal semantics.

at least $|\rho| = .44$ (medium effect size) was required to observe a significant correlation at an alpha level of $p < .05$ with .80 power. Thus, effects smaller than $|\rho| = .44$ would not be reliably detected.

Procedures

Autobiographical fluency

The AFT was administered and scored according to the same procedure as in Experiment 1. An additional period was included to account for the inclusion of the individuals aged above 30 years of age (i.e. 5–11, 11–14, 14–19, 19–24 years of age, from 24 years of age to the last year, and the last year).

Autobiographical interview

The AI (Levine et al., 2002) is a semi-structured interview in which the subject is asked to choose and retrieve an event that occurred in a specific spatiotemporal context from each of five life periods: childhood (ages 0–11), adolescence (ages 11–18), early adulthood (ages 18–30), adulthood (ages 30–55) and the last year. Retrieval was tested across three phases with increasing levels of probing, namely free recall, general probe, and specific probe. The free recall phase requires describing the event in as much detail as possible, without any interruption by the examiner, until a natural endpoint is reached or 5 min have elapsed (Palombo et al., 2015). After the free recall, the examiner may use general probes to encourage more detail recall. At the end of the recall condition, the specific probe is administered and consists of a structured interview designed to elicit additional details that were not spontaneously retrieved. The specific probe questions are divided into five categories: event (events, weather, other people involved and their behaviour), time (year, month or season, date, day of the week, time of day), place (country, province, city, street, address, building, room within the building, and location within the room), other sensory information (visual images, colours, tastes, smells, sounds, physical sensations,

TABLE 2 Experiment 1: Pearson correlation coefficients.

	EAM	enPS	SAM Ep	SAM Se	SAM Sp	SAM Fu
EAM						
Pearson's <i>r</i>	—					
<i>p</i>	—					
EnPS						
Pearson's <i>r</i>	.712*** ^a	—				
<i>p</i>	<.001	—				
SAM Ep						
Pearson's <i>r</i>	.730*** ^a	.547*** ^a	—			
<i>p</i>	<.001	.006	—			
SAM Se						
Pearson's <i>r</i>	.178	.398	.393	—		
<i>p</i>	.407	.054	.057	—		
SAM Sp						
Pearson's <i>r</i>	.283	.134	.364	.362	—	
<i>p</i>	.180	.532	.080	.082	—	
SAM Fu						
Pearson's <i>r</i>	.029	-.063	.101	.200	.008	—
<i>p</i>	.892	.771	.640	.348	.972	—

Abbreviations: EAM, Episodic Autobiographical Memory; enPS, experience-near Personal Semantics.

^a*p*FDR < .05.

p* < .05, *p* < .01, ****p* < .001.

TABLE 3 Experiment 2: Demographics.

	Sex	Age	Education
<i>N</i>	F	11	
	M	16	
Mean		54.3	12.9
Median		61	13
Standard deviation		16.1	3.30
Minimum		26	8
Maximum		76	19

body position and duration of the event), and emotion/thought (feelings and thoughts experienced at the time of the event). The interview is audio-recorded and subsequently transcribed for scoring procedure. Each memory is then segmented into informational bits or details, defined as a unique occurrence, observation or thought typically expressed as a grammatical clause. Two broad groups of details can be defined: internal details are those that pertain directly to the main event, are specific to time and place and considered to reflect episodic re-experiencing; external details are semantic (facts or extended events which are devoid of recollection of a specific time and place), repetitions, other details or autobiographical events other than the main event. We first tallied and summed details for each category, forming an internal and an external composite score; scores were analysed cumulatively across the different levels of recall (Levine et al., 2002).

Analyses and results

Similar to Experiment 1, data were analysed using *Jamovi* (Version 2.3.18.0). Descriptive statistics are extensively reported in [Table S2](#).

We replicated the results of the reliability of the AFT: Cronbach's α resulted to be very high for both EAM (Cronbach's $\alpha = .836$, McDonald's $\omega = .847$; [Figure 3](#)) and enPS (Cronbach's $\alpha = .858$, McDonald's $\omega = .876$; [Figure 4](#)).

Pearson's correlation coefficients, along with their significance (two-tailed p), are summarized in [Table 4](#). EAM was significantly correlated with internal details recollected during the AI, but it was not correlated with external details. Instead, enPS correlated both with internal and external details provided during the AI.

Additional analyses are reported in [Appendix S1](#).

In sum, results of Experiment 2 confirm the good reliability of the AFT. Interestingly, the EAM condition was specifically associated with internal details provided during the AI, which refer to specific contextual features of the event, supporting the possibility that this condition of the AFT actually taps the episodic component of autobiographical memory, rather than a more abstracted and semanticized component. Conversely, enPS was significantly associated with both internal and external details, suggesting that this condition relies, at least in part, on context-dependent conceptual knowledge about the self. Data are available at the following link <https://osf.io/qcmd7/>.

DISCUSSION

Here, we aimed to provide a new tool for testing autobiographical memory. To this aim, in the first study, we tested the reliability of the AFT and its relation with a self-report measure of autobiographical memory. The results of Experiment 1 suggest good reliability as well as good convergent and divergent

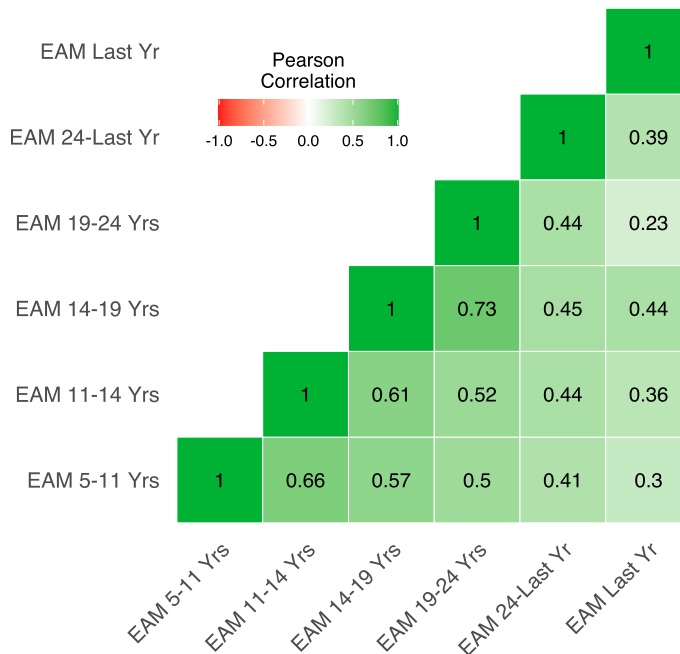


FIGURE 3 The heatmap reflects the Pearson correlation coefficients between different lifetime periods, probed during the episodic condition of the AFT of Experiment 2. AFT, Autobiographical Fluency Task; EAM, episodic autobiographical memory.

validity. Indeed, we found that performances on both EAM and enPS tested through the AFT were significantly correlated with the autobiographical memory subscales of the SAM; instead, no significant correlation was detected between performances on the AFT and spatial and future thinking subscales

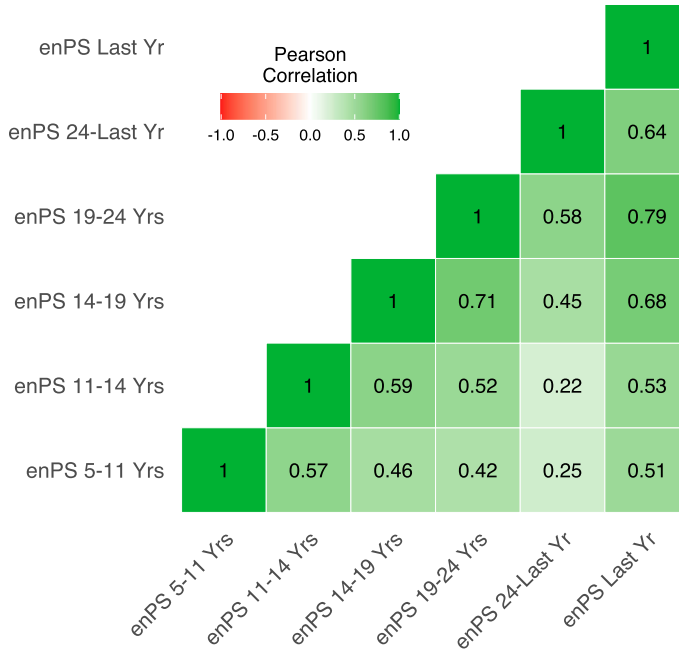


FIGURE 4 The heatmap reflects the Pearson correlation coefficients between different lifetime periods, probed during the enPS condition of the AFT of Experiment 2. AFT, Autobiographical Fluency Task; enPS, experience-near personal semantics.

TABLE 4 Experiment 2: Pearson correlation coefficients.

	EAM	enPS	Internal details	External Details
EAM				
Pearson's <i>r</i>	—			
<i>p</i> -Value	—			
enPS				
Pearson's <i>r</i>	.642*** ^a	—		
<i>p</i> -Value	<.001	—		
Internal details				
Pearson's <i>r</i>	.413* ^a	.505** ^a	—	
<i>p</i> -Value	.032	.007	—	
External details				
Pearson's <i>r</i>	.223	.449* ^a	.172	—
<i>p</i> -Value	.263	.019	.390	—

Abbreviations: EAM, Episodic Autobiographical Memory; enPS, experience-near Personal Semantics.

^a*p*FDR < .05.

p* < .05, *p* < .01, ****p* < .001.

of the SAM. These results support the convergent validity of the AFT and its specificity for testing autobiographical memory. Furthermore, both EAM and enPS were correlated with the episodic subscale of the SAM, whereas enPS was only marginally correlated with the semantic component of the SAM. Overall, these data suggest that the EAM condition of the AFT may be a reliable measure of the episodic component of autobiographical memory. On the other hand, enPS seems to be associated with both episodic and semantic components of the SAM, supporting the idea that this condition may actually test context-dependent personal semantics.

Exploiting the distinction between internal and external details suggested by Levine and colleagues (Levine et al., 2002), and operationalized in the AI, the second study provides a more fine-grained picture of the dimensions actually tested by using the AFT. Also in this case, we demonstrated good reliability of the AFT. Noteworthy, we found that EAM was specifically correlated with the production of internal details, whereas enPS correlated both with internal and external details. Overall, these results expand over those of Experiment 1, confirming the suitability of the AFT for testing autobiographical memory. More in detail, the specificity of the EAM condition in testing the episodic component of the autobiographical memory is further confirmed. Moreover, the results of Experiment 2 support the idea that enPS may be a measure of context-dependent personal semantics, namely experience-near personal semantics.

The present results deserve both methodological and theoretical considerations. From a methodological perspective, they support the use of the AFT to obtain an objective and specific measure of autobiographical memory. As reported above, autobiographical memory deficits are quite common in widespread conditions such as traumatic brain injury (Esopenko & Levine, 2017), stroke (Lim & Alexander, 2009), mild cognitive impairment, and AD (el Haj et al., 2015; Meulenbroek et al., 2010). However, most of the neuropsychological batteries aimed at testing cognitive status in these samples of patients do not include tasks testing autobiographical memory deficit. In fact, standard autobiographical memory interviews may be time-consuming in the context of neuropsychological assessments of neurological conditions characterized by impairments in several cognitive domains, such as traumatic brain injury and AD. Indeed, in these cases, the neuropsychological assessment includes a large corpus of tests. Besides the time needed to administer the interview, the time needed to transcribe and score the individuals' verbal production should be also considered, especially when the neuropsychological evaluation is aimed to inform timely rehabilitation protocols. The AFT task may represent a feasible test of autobiographical memory in clinical settings since no more than 20 minutes are required to complete the task. This would allow for testing routinely autobiographical memory, in people who claim memory deficits and to disclose subtle changes associated with cognitive decline in prodromal and early stages of AD.

Importantly, cognitively normal middle-aged and older individuals at increased risk of AD, namely $\epsilon 4$ carriers, generated a lower number of episodic details than non-carriers, when tested with the AI and a lower number of exemplars when tested with an autobiographical fluency task (Grilli et al., 2018, 2021). Thus, autobiographical memory impairment may be an early marker of AD, sensitive enough to catch subtle decline in prodromal stages, which is pivotal for timely intervention. Also, testing different dimensions of autobiographical memory may have a pivotal role in differential diagnosis between different forms of neurodegenerative disorders (e.g. Semantic Dementia and AD). Actually, semantic dementia (SD) is mainly characterized by a greater preservation of episodic than semantic self-representations at the onset: early to moderate SD patients display greater impairment in the semantic aspects of remote autobiographical memory than in the episodic ones (Duval et al., 2012). In mild-to-moderate stages of AD, instead, performance on the AFT is worse than in healthy controls, with a temporal gradient of loss for personal semantic memory (Addis & Tippett, 2004). Overall, the AFT could play a key role in standard clinical neuropsychological practice, allowing not to exceed time-limits of standard clinical practice, and improving also differential diagnosis between different forms of neurodegenerative disorders.

However, the use of AFT should be considered as a first-level screening procedure for testing autobiographical memory deficits in clinical settings. First, it allows for testing the access to autobiographical memories, but it cannot assess re-experiencing. Second, enPS cannot be considered a measure of context-independent personal semantics, which also deserve attention from a clinical perspective. Finally, it cannot allow for testing the semanticization of episodic memory. Thus, the AFT should be integrated

with more comprehensive measures of autobiographical memory, such as the AI, for an in-depth diagnostic assessment.

From a theoretical perspective, at a first glance, it might seem quite unexpected that enPS correlated with SAM Ep (Experiment 1) as well as with internal details in the AI (Experiment 2). However, as stated in the Introduction, enPS is characterized by the association with a spatiotemporal context, and thus is not completely abstracted as general semantic knowledge, that is devoid of contextual features (Grilli & Verfaellie, 2016). Thus, our results tie well with the idea that a continuum exists between episodic and semantic autobiographical memory: according to this proposal, whereas shared features of lifetime periods would be represented in a substantially abstract format at one extreme of such a continuum, individual personal episodes would be represented contextually (i.e. in their temporal, spatial and perceptual details) at the other extreme (Conway & Pleydell-Pearce, 2000; D'Argembeau, 2020; Renoult et al., 2012). Different categories of personal semantic information thus would differ according to their position along the episodic-semantic continuum (Grilli & Verfaellie, 2014, 2016). In line with this possibility, it has been proposed that a continuum between episodic and semantic memory may also be identified at the neural level, with both formats depending on the activity of regions within the Default Mode Network, and on their differential interactions with other cortical regions (Irish & Vatansever, 2020).

The present study also has some limitations. First, it has been pointed out that the episodic and semantic subscales of the SAM may actually measure domain-general self-perceived recollection abilities, and should thus not be interpreted as independent measures of episodic autobiographical and semantic memory, respectively (Setton et al., 2022). Also, it has been shown that external details count in the AI does not correlate with independent measures of semantic memory, and generally that a two-factor structure of the AI clearly distinguishing internal from external details seems to be not entirely well supported (Lockrow et al., 2023). Thus, although present results show overall good psychometric properties of the AFT and support its use as a measure of episodic autobiographical memory and experience-near personal semantics, future studies aimed to provide normative values for the AFT should possibly test associations with other measures assessing episodic and semantic autobiographical memory. Also, future studies should directly test the correspondence between real-world memory difficulties and the AFT in clinical samples. Similarly, further research is needed to more deeply assess the specificity of the recollected items for the EAM and enPS condition (for instance, asking a fuller description of memory after the end of the task, see Hitchcock et al., 2020), thus allowing to more completely characterize component processes involved in the two conditions of the AFT.

Overall, the present study provides evidence for good psychometric properties of the AFT which can be considered a reliable measure of autobiographical memory, especially of episodic autobiographical memory and experience-near personal semantics. The next step is to provide normative data in a large sample of individuals, including all age ranges, to come up with the diagnostic value of this task, so that it can become actually part of clinical batteries for the neuropsychological assessment of different types of neurological patients.

AUTHOR CONTRIBUTIONS

Maddalena Boccia: Conceptualization; methodology; formal analysis; investigation; writing – original draft; writing – review and editing; resources; funding acquisition; supervision. **Matilde Conti:** Conceptualization; methodology; formal analysis; investigation; writing – review and editing. **Alice Teghil:** Conceptualization; methodology; investigation; formal analysis; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

All data and materials are available at <https://osf.io/qcmd7/>.

ORCID

Maddalena Boccia  <https://orcid.org/0000-0002-2044-8326>

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Appendix S1.

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