Alma Mater Studiorum – Università di Bologna

DOTTORATO DI RICERCA IN

Scienze Psicologiche

Ciclo XXVII

Settore Concorsuale di afferenza: 11/E4

Settore Scientifico disciplinare: M-PSI/08

THE PHENOMENOLOGICAL EXPERIENCES OF AUTOBIOGRAPHICAL MEMORY: A CROSS-SECTIONAL AND A LONGITUDINAL STUDY

Presentata da: Dott.ssa Martina Luchetti

Coordinatore Dottorato	Relatore
Chiar.mo Prof.	Chiar.mo Prof.
Maurizio Codispoti	Nicolino C. F. Rossi

Esame finale anno 2015

ACKNOWLEDGEMENTS

I am very thankful to Dr. Ornella Montebarocci for introducing me to the fascinating field of autobiographical memory and to Prof. Nicolino Rossi for his caring and patience.

The data presented here were collected in collaboration with Dr. Angelina R. Sutin, Assistant Professor at the College of Medicine, Florida State University (USA). I would like to especially thank Dr. Sutin for her guidance and support. I have learned a great deal from her rich knowledge, enthusiasm and encouragement.

I would also like to thank my mother and my sister. They were always supporting me and encouraging me with their best wishes.

Contents

Summary

Phenomenology is a critical component of autobiographical memory retrieval. The phenomenology of a memory is what brings back to life a past experience (Sutin & Robins, 2007; Tulving, 2002). Some memories are vivid and rich in sensory details whereas others are faded; some memories are experienced as emotionally intense whereas others are not (Montebarocci, Luchetti, & Sutin, 2014). Sutin and Robins (2007) identified 10 dimensions in which a memory may vary—i.e., Vividness, Coherence, Accessibility, Sensory Details, Emotional Intensity, Visual Perspective, Time Perspective, Sharing, Distancing, and Valence—and developed a comprehensive psychometrically sound measure of memory phenomenology, the Memory Experiences Questionnaire (MEQ). Phenomenology has been linked to underlining stable dispositions—i.e. personality (Singer & Salovey, 1993), as well as to a variety of positive/negative psychological outcomes—well-being and life satisfaction, depression and anxiety, among others. Beyond content, memory phenomenology reflects important aspects of psychological functioning that contribute to individuals' sense of continuity over time (Prebble, Addis, & Tippett, 2013).

Using the MEQ, the present thesis addresses several questions regarding: (1) age differences in memory affect and phenomenology across the adult lifespan (Study 1); (2) phenomenology and affect continuity across memory and over time (Study 2); (3) the interrelations between memory phenomenology, personality and positive/negative psychological outcomes (Study 1 and Study 2). In particular, autobiographical memory phenomenology has been proposed as a dynamic expression of personality functioning that partially explains adaptive/maladaptive outcomes.

The current thesis provides a brief overview of the principal models and theories on autobiographical memory (*Introduction*, *Section 1*) and the phenomenological component of autobiographical recollection (*Introduction*, *Section 2*). *Study 1* explored the subjective experience of two particular autobiographical memories—a Turning Point Memory and a Childhood Memory—in a large, stratified sample of American adults aged 20 to 90 years. *Study 2* tested the same types of memories but applied a longitudinal design in a sample of young Italian adults. Implications of the findings are discussed proposing future lines of research (*General Discussion*). In particular, the need for more longitudinal studies is highlighted, along with the combined application of both self-report questionnaires and narrative measures.

Introduction

1. What is Autobiographical Memory? A brief overview

Autobiographical memory concerns the recollection of personally experienced past events (Brewer, 1986)—i.e., the first day of school, the birth of a child, wedding day, etc.

It is worth distinguishing, however, between episodic memory and autobiographical memory (Fivush, 2011). Autobiographical memory is not simply the memory of what, when, and where an experience happened, but involves also what Tulving (2002) calls *autonoetic consciousness*: The conscious experience of self as having experienced the past. Autobiographical memory concerns events of personal significance, while episodic memory often refers to trivial events (e.g., a list of words retrieved in a laboratory setting). Autobiographical memory extends back over years and decades, while episodic memories usually last minutes or hours. Lastly, while episodic memory refers to single events, autobiographical memory generally links past events into a personal story that relates the self through past, present and future (as reviewed by Fivush, 2011; see also Habermas & Bluck, 2000; McAdam, 2001).

Autobiographical memory is of fundamental significance because it defines our being and purpose in life, grounding the self in the experience (Conway, 2005). As a consequence, it has been researched in many different areas of psychology, i.e. cognitive, social, developmental and clinical psychology (Conway & Pleydell-Pearce, 2000). This session briefly review the principal models and findings of autobiographical memory research.

1.1 The Self-Memory System (SMS) and latter theorizations

Conway and Pleydell-Pearce (2000) developed an influential model of autobiographical memory, the Self-Memory System (SMS), which integrates many different areas of the psychological research on memory. The authors defined autobiographical memories as "transitory dynamic mental constructions generated from an underlying knowledge base" (Conway & Pleydell-Pearce, 2000, p. 261).

In their early theorization, the SMS comprises an *autobiographical knowledge base* and a set of goal-driven control processes, referred as the *working self*. The autobiographical knowledge base includes information at different levels of specificity: (1) *lifetime periods*, which consist of representations of prolonged periods of time (e.g., "early years of marriage", "working at …"); (2) *general events*, which represent descriptions of repeated events (e.g. "driving to university every morning") or single events (e.g., "my holiday in Florida"); and (3) *event specific knowledge*, which refers to more concrete sensory-perceptual-affective aspects of the events. The working self comprises of a hierarchy of goals, which drive cognition and behavior. According to the model, the active goals of the working self operate as a set of control processes that determine encoding, accessibility to autobiographical knowledge and the construction of specific memories (Conway, 2005). A particular memory can be retrieved via two processes: *generative retrieval* (voluntary, top-down process) or *direct retrieval* (involuntary, bottom-up process). When an internal or external *cue* spontaneously activates part of the autobiographical knowledge base then the working self delineates a 'retrieval model' that specifies memory recollection: First some information is reported, and then new information is retrieved, in an iterative search-evaluate-elaborate cycle, that leads to the construction of a particular memory (Conway, 2005). Control processes are needed to guide the search while inhibiting processing of

irrelevant information. In contrast, direct retrieval occurs when a cue produces immediate activation of event-specific knowledge. Because specific knowledge is typically linked to only one general event, and the general event is linked to only one lifetime period, a pattern of activation is quickly established. Memories that are involuntarily recalled tend to be more specific and less frequently rehearsed than memories retrieved voluntarily. In this case, control processes may intervene to prevent (inhibit) the disruptive effect of spontaneous retrieval on the ongoing activities.

Later, Conway, Singer and Tagini (2004) proposed a modified version of the SMS that further clarifies the relation between autobiographical base knowledge and self (for reviews see also Singer, Blagov, Berry, & Oost, 2013; Singer & Conway, 2011). The authors introduced a new component, the *Long-term Self,* which encompasses aspects of non-immediate knowledge of the self (see Figure 1). Most episodic memories (i.e., sensory-perceptual-affective representations) are rapidly lost but those related to current goals are retained for longer period of time and integrated with long-term autobiographical knowledge (Conway, 2005, 2009; Conway et al., 2004). In the new model, the autobiographical knowledge base comprises not only general events and lifetime periods but also a more abstract, culturally determined level of information, the *Life-story Schema*. The life-story schema refers to one's life in entirety, for example "my career as a psychologist", "my role as a spouse", and so on (Bluck & Habermas, 2000; Singer et al., 2013). The other component of the long-term self is the *Conceptual Self*. The conceptual self consists of nontemporally specified conceptual self-structures, such as narrative scripts (Demorest, 1995; Tomkins, 1979), possible selves (Markus & Nurius, 1986), internal working models (Bowlby, 1969/1982, 1973, 1980), attitudes, values, beliefs, and other semantic self-constructs. Although this semantic knowledge of the self exists without grounding

in specific autobiographical knowledge, it is in general linked with summary and/or specific memories (as reviewed in Singer et al., 2013).

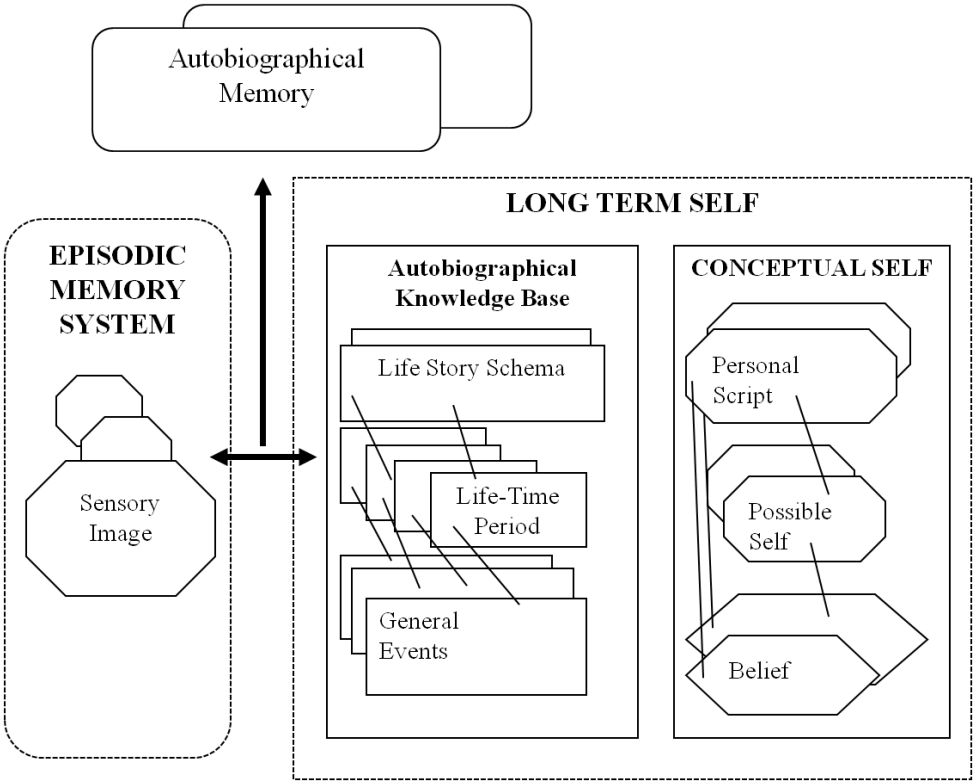


Figure 1: The Self-Memory System. Adapted from "The self and autobiographical memory: Correspondence and Coherence" by M. A. Conway, J. A. Singer, & A. Tagini, 2004, *Social Cognition*, 22, p. 498. Copyright 2004 by Guilford Press. Reprinted with permission.

Conway and colleagues (2004; Singer & Conway, 2011) highlight the fundamental tension between two competing demands in autobiographical memory: (1) to maintain *adaptive correspondence*—i.e. an accurate record of the ongoing activity—and (2) to ensure *self-coherence*—i.e. a coherent and stable record of the self's interaction with the world that extends beyond the present moment. The flexibility of the SMS to answer each of these demands is considered the key toward psychological health and well-being (Singer et al., 2013; Singer & Conway, 2011).

1.1.1 Self-Defining Memories

Singer and colleagues (Singer & Moffitt, 1991-1992; Singer & Salovey, 1993) identified a special class of autobiographical memories called *self-defining memories* that are particularly important for self-coherence. These memories are highly relevant to the current self and are characterized by the following characteristics: They are (a) affectively intense, vivid and filled with sensory details, (b) repetitive and readily accessible, (c) intimately linked to other memories that share similar emotions and themes, and (d) relevant to the individual's most important enduring concerns and conflicts (Singer & Salovey 1993). As maintained by Conway and colleagues (2004), these memories are closely related to developmental goals (e.g., autonomy, achievement, growth, ageing, etc.) and become especially active when these goals undergo change. For example, when the ongoing goal activity is frustrated or challenged by an obstacle, a self-defining memory will be retrieved, triggering a rapid response to situational demands.

Self-defining memories have become the subject of a growing number of studies (e.g., Blagov & Singer, 2004; Jobson & O'Kearney, 2008; Lardi, D'Argembeau, Chanal, Ghisletta, & Van der Linden, 2010; Maccallum & Bryant, 2008; Sutherland & Bryant, 2005; Sutin, 2008; Sutin & Gillath, 2009; Sutin & Robins, 2005, 2010; Sutin & Stockdale, 2011; Thorne, McLean, & Lawrence, 2004; Wood & Conway, 2006). These memories represent a touchstone for self-understanding and, thus, constitute significant material to work on during clinical interactions (Singer & Bonalume, 2010; Singer & Conway, 2011).

Self-defining memories can be considered the building blocks of *life story* (as defined by McAdams, 2001; Singer et al., 2013).

1.1.2 The Life Story

McAdams (1985, 2001) stated that the *life story*—the highest and most abstract level of autobiographical memory (Conway, 2005)—is *identity*. Since the 1980s, McAdams has built an extensive research program on life story narratives. He specifically identified and studied 'key events' composing personal life: from 'childhood events', to 'turning' life-changing experiences, to 'high' and 'low' points, to 'life challenges' and future expectations (McAdams, 2008). In Western cultures, two dominant themes of relationship (communion) and autonomy (agency) characterize autobiographical memories and life stories (see e.g., Woike, Gersekovich, Piorkowski, & Polo, 1999). Life stories can be also evaluated on the base of their emphasis on personal and social generativity (individual's will to improve society and help future generations): For example, individuals high in generativity tend to transform their personal stories from negative to positive ('redemption narratives'; McAdams, 2006a), showing higher levels of well-being and personal growth (McAdams & De St. Aubin, 1992; McAdams, De St. Aubin, & Logan, 1993).

The ability to construct coherent life narratives emerge in adolescence (Habermas & Bluck, 2000) and evolve through adulthood (McAdams & Olson, 2010; Reese et al., 2011). Habermas and Bluck (2000) suggest that when narrating their story, individuals establish a chronological sequence of events (*temporal coherence*), draw cause-and-effect relationships between events (*causal coherence*), and detect the presence of unifying themes across experiences (*thematic coherence*; e.g. "if you put your mind to it you can accomplish anything"). They also propose a cultural concept of biography, which includes landmark events (and their timing), such as normative transitions and life-cycle events (Habermas, 2007).

Deficits in life story coherence may have unique links to psychological disorders (see McAdams, 2006b; Singer et al., 2013). For example, researchers and clinicians have observed fragmented and disorganized narratives of traumatic experiences. Incoherent accounts have been indeed associated with more psychological distress following trauma (e.g., Murray, Ehlers, & Mayou, 2002). Still, the retrieval of less specific or vague memories has been implicated in the development and maintenance of depressive symptomatology (Sumner, 2012; Williams et al., 2007 for reviews; see below for details).

1.2 The lifespan retrieval curve

The organization of autobiographical knowledge as proposed in the SMS is what has been called the *microstructure* of autobiographical memory (Conway & Pleydell-Pearce, 2000; Conway & Rubin, 1993). Autobiographical memory also has a *macrostructure,* as appears in the lifespan retrieval curve (Conway, 2005; Conway & Rubin, 1993; Conway, Wang, Hanyu, & Haque, 2005). When adults (about 35 years and older) are asked to retrieve autobiographical memories in free recall, they mostly recall memories from specific periods of their lives (e.g. early adulthood or recent years). In particular, when plotting the memories according to age at encoding, three components emerge from the curve (see Figure 2): *childhood amnesia* (i.e., a lack of memories from birth to about five years of age), *reminiscence bump* (i.e., a larger numbers of memories from 10 to 30 years), and *recency*.

These three components of the retrieval curve have been observed in many studies, and represent one of the most reliable phenomena of memory research (Conway & Pleydell-Pearce, 2000; Conway & Rubin, 1993). For example, in a recent study, Conway et al. (2005) studied

participants from China, UK, Bangladesh, and America and found clear evidence of childhood amnesia and reminiscence bump in all five countries.

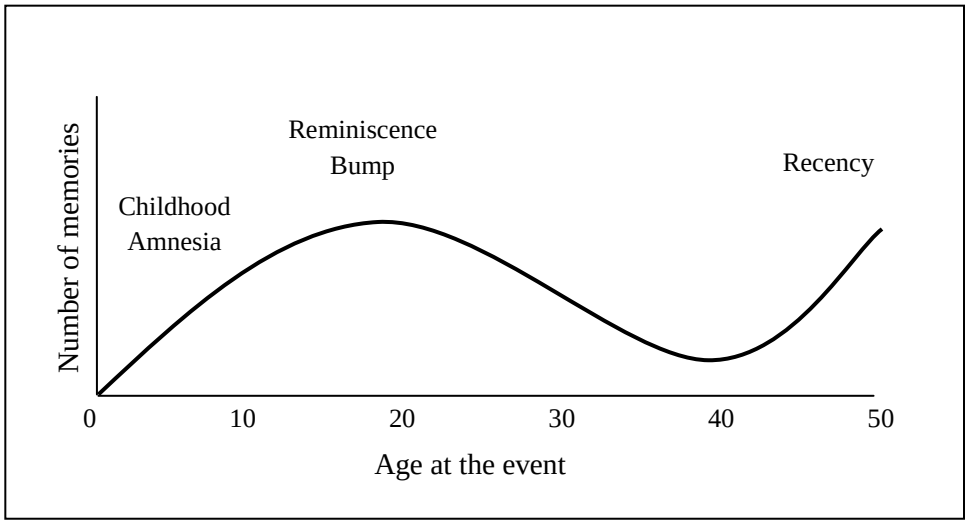


Figure 2: The lifespan retrieval curve.

Many theoretical explanations have been proposed for each of the three components:

- *Childhood Amnesia* (see Wang, 2003 for a review)

  The most famous account of childhood amnesia is provided by Freud (1915/1957), according to which threat-related thoughts and experiences of early years (e.g., sexual feeling to towards a parent) are repressed and consigned to the unconscious. More recently, Howe and Courage (1997) highlighted the role of the 'cognitive' self: Infants can form autobiographical knowledge only after the second years of age when they start distinguishing between 'I' and 'Me', having a sense of personal significance of the events. Other accounts emphasize the role of language development and the emergence of narrative abilities (i.e., social-cultural-development theory; Nelson & Fivush, 2004). In particular, the mother's reminiscing style is considered an important factor: Children whose mothers have an elaborative reminiscing style show greater ability to talk about past experiences (Harley &

Reesee, 1999). As such, both social-cultural-linguistic and cognitive factors render memories after the childhood amnesia period accessible.

- *Reminiscence Bump* (see Conway, 2005 for a review)

  Rubin, Rahhal, and Poon (1998) argued that both novelty and stability explain the bump of events encoded in early adulthood. Many memories of early adulthood refer to novel experiences (or first-time experiences) that are salient and hence memorable. The high accessibility of memories from early adulthood (and from other life periods) may also be related to their stable relation with the self (Conway, 2005). Perhaps, memories from the period of the reminiscence bump refer to self-defining experiences and thus serve to help maintain a coherent self over time. Researchers have also suggested that the bump may be only present, or more prominent, for positive experiences (Rubin & Berntsen, 2003); indeed, most of the life events that occur between 10 and 30 years refers to typical positive events such as falling in love, marriage and having children (Rubin, Berntsen, & Hutson, 2009; Scherman, 2013). More recently, researchers point out that the temporal location of the bump may vary depending of the method used to elicit memories: The mean age of the bump ranges from 8 to 22 years for word-cued memories, while it ranges from 15 to 27 years for important memories (Koppel & Berntsen, 2015).

- *Recency*

  Surprisingly, little research has been directed to this component of the curve. Given their link with the goals of the current self, Conway and colleagues (Conway & Pleydell-Pearce, 2000; Conway et al., 2004) view recent memories as more accessible than remote ones. Rehearsal may be as well an important factor in the retention of recent everyday experiences.

Interestingly, Conway and Holmes (2004) classified older adults' memories on the basis of Erikson's (1950, 1997) psychosocial stages. The authors found that the contents of the memories corresponded to the psychosocial stage in which they were formed; for example, memories formed in early adulthood were coded as being associated identity/identity confusion and intimacy/isolation themes, while memories formed in middle-age were predominantly associated with generativity/stagnation and integrity/despair themes. As such, it seems that memories of events that were once of great self-relevance remain highly accessible and are the first to bump in mind when a period in the past is freely sampled (Conway & Holmes, 2004).

1.3 Autobiographical memory deficits in clinical disorders

Over the few last decades, a large number of studies focused on the relation between autobiographical memory deficits and emotional disorders. For instance, when asked to retrieve a specific autobiographical memory in response to a cue word (e.g., "happy"), individuals with a diagnosis of major depression tend to be less specific and/or more overgeneral in their recall than non-diagnosed individuals (Sumner, 2012; Williams et al., 2007). The so-called *overgeneral autobiographical memory* (OGM) phenomenon has been found to have a robust and replicable association with depression and trauma-related anxiety disorders (as reviewed in Sumner, 2012). OGM has been associated with deficits in problem solving (e.g. Gobbard, Dritschel, & Burton, 1996, 1997) and difficulties in imagining future events (Williams et al., 1996). Williams et al. (2007), and later Sumner (2012), proposed OGM as a vulnerability factor for depression and post-traumatic stress disorders; OGM have been found to longitudinally predict more severe symptoms (e.g., Boelen, Huntjens, & van den Hout, 2014; Kleim & Ehlers, 2008; Sumner, Mineka, & McAdams, 2013; Van Daele, Griffith, Van den Bergh, & Hermans, 2014) and a

worse course of depression and onset of subsequent episodes (e.g., Hermans et al., 2008; Kleim & Ehlers, 2008; see Sumner, Griffith, & Mineka, 2010). The phenomenon also extends to other clinical disorders, such as bipolar disorder (e.g., Scott, Stanton, Garland & Ferrier, 2000), schizophrenia (e.g., Warren & Haslam, 2007), and borderline personality disorder (e.g., Kremers, Spinhoven, & Van der Does, 2004; Reid & Startup, 2010), as well as to specific population (e.g., subjects with physical illness; e.g., Kangas, Henry, & Bryant, 2005).

Building on the SMS, Williams et al. (2007) developed a comprehensive model of factors that may contribute to the OGM phenomenon: the CaR-FA-X. During generative retrieval, the search for specific information aborts prematurely, when only general descriptions have been accessed. This abortion results from the combination of three mechanisms (see Sumner, 2012): (1) *capture and rumination* (CaR), which refers to when abstract self-relevant information activate ruminative processes "capturing" individual's cognitive resources and disrupting the retrieval search (e.g., Debeer, Hermans, & Raes, 2009); (2) *functional avoidance* (FA), which refers to when the retrieval of specific memories is passively avoided to down-regulate negative emotions (e.g., Hermans, de Decker, et al., 2008); (3) *impaired executive control* (X), which refers to when deficits on executive resources limit the ability to conduct a successful retrieval search (e.g., Dalgleish et al., 2007).

Blagov and Singer (2004) found higher repressive defensiveness (as defined by Weinberger, Schwartz, & Davidson, 1979) to be associated with less specific recall. As suggested by the authors, repression preempts any type of specific material—positive or negative. Although this avoidance strategy may be useful in some circumstances, it becomes dysfunctional when develops into a habitual response pattern (see e.g., Williams, Eelen, Raes, Hermans, & 2006). Although it reduces the immediate emotional impact of an event, it also

hinders the beneficial functions that memories serve. The retrieval of vivid and detailed memories, indeed, supports individuals' ongoing goal pursuits and future behavior (Blagov & Singer, 2004; Singer et al., 2013).

According to Singer et al. (2013), the ability to summon specific memories should be also accompanied by the ability to draw meaning from past experiences. In particular, Pasupathi and colleagues (e.g., Pasupathi & Mansour, 2006; Pasupathi, Mansour, & Brubaker, 2007) highlighted the importance to link past experiences to long-term self knowledge to guarantee self-stability and explain self-change (as reviewed in Singer et al., 2013). Drawing meanings from past experiences have been found to generally predict well-being and positive growth (e.g., Bauer, McAdams, & Sakaeda, 2005; Lilgendahl & McAdams, 2011; McAdams, Reynolds, Lewis, Patten, & Bowman, 2001). Singer and Conway (2011) argued that psychological health emerges from a flexible combination of the capacity to evoke specific memories with the capacity to connect such memories to conceptual structures of the self (Singer et al., 2013).

1.4 Sampling autobiographical memories

Many different methods have been applied to study autobiographical memory. One of the main critical issues in the research field is ecological validity (i.e. applicability to real life). Ecological validity of memory research consists of two aspects: representativeness and generalisability (Kvavilashvili & Ellis, 2004). Representativeness refers to the extent to which a phenomenon can be investigated in a form and in a context that corresponds to its occurrence in everyday life, while generalizability refers to the degree to which the findings of a particular study (or set of studies) are applicable to the real world (Kvavilashvili & Ellis, 2004). Memories formed in a laboratory likely differ from memories retrieved in naturalistic context, for example

those memories that an individual shared with a friend during a conversation. Nevertheless, research greatly advanced the understanding of basic processes of autobiographical memory.

Methodological approaches have ranged from self-study in which researchers documented their own experience in a diary (e.g., Linton, 1975; Wagenaar, 1986), to cue word tasks (e.g., Williams & Broadbent, 1986; since Galton, 1879), to structured interviews (e.g., Kopelman, Wilson, & Baddeley, 1989; McAdams, 2008). One of the most diffuse methods, used to assess memory specificity, is the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986). Typically, individuals are presented with negative/positive cue words and are asked to retrieve a specific memory for each cue within 30 seconds; the number of specific/general memories, as well as latency times, is used as units of the analyses. Several variations of the task are, however, present in literature (Griffith et al., 2012): Variations concern the number and type of cues used (e.g., the inclusion of neutral cue words), the modality of cue presentation (e.g., written vs. oral format), the type of instruction given to participants (e.g., detailed vs. non-detailed instructions). Other dimensions of memory beyond specificity (e.g., affective content) have been investigated using different memory tasks—examples are the Self-Defining Memory Task (Singer & Moffitt, 1991-1992), McAdams's (2008) Life Story Interview, and the Autobiographical Interview (Levine, Svoboda, Hay, Winocur, & Moscovitch, 2002). Participants are usually asked to recall a number of 'key events' or self-defining memories—without any valence restriction, with the aim to sample their most personally relevant memories––i.e., memories that one may recall during an intimate conversation or in a therapeutic context. Singer and Bonalume (2010) recently proposed a Coding System for Autobiographical Memory Narratives in Psychotherapy, through which researchers may be able to extract self-defining

memories from psychotherapy protocols, and identify central themes and conflicts of client's stories.

Defining the key components, processes, and functions of autobiographical memory have important implications in clinical psychology. Autobiographical memory offers a window into the individual's personality functioning and can be a target of psychological interventions (Singer, 2004; Singer et al., 2013; Singer & Conway, 2011).

2. The phenomenological experiences of Autobiographical Memory

Memory phenomenology is the conscious experience associated with retrieval of the memory. The phenomenological perspective can be traced back to Wilhelm Wundt, the first experimental psychologist. Wundt had people 'introspect', that is report on the subjective experience of a phenomenon. Since Wundt, there has been a long-lasting debate on introspection and phenomenology. Freud highlighted the importance of stripping away the phenomenology to discover the unconscious meanings of early experiences. Behaviorists, on the other hand, saw phenomenology as incompatible to the study of observable behaviors (as reviewed in Sutin & Robins, 2007). Recent years have, however, observed a new interest in the conscious experience of personal memory (Johnson, Foley, Suengas, & Raye, 1988; Rubin, Schrauf, & Greenberg, 2003; Sutin & Robins, 2007).

According to Tulving (2002), phenomenology is what allows individuals to travel back in time and consciously relive their past. The following extract is an example[1]:

> *'When I was 4 years old, my Grandmother and Grandfather came to visit us. It was a beautiful day and my grandparents wanted to take me and my sister for a walk on the beach to collect shells.* […] *Suddenly, the sky turned grey and the ocean started swelling.* […] *We start running as fast as we could to reach the car. But I was left behind. My Grandfather came back and holds me in his arms.* […] *I remember feeling absolutely loved.'*

While recalling that day at the beach, the participant may re-experience the emotions felt at the time and see the scene as it is re-happening. Beyond content, the subjective experiences of autobiographical memory may reflect important aspects of psychological functioning (Blagov & Singer, 2004; Singer & Salovey, 1993).

[1] An example of memory is drawn from Study 1; the memory account has been shortened and slightly modified to protect the participant's identity.

2.1 The identification of 10 phenomenological dimensions

Based on an extensive review of the literature, Sutin and Robins (2007) identified 10 relevant phenomenological dimensions:

(1) Vividness

Vividness is one of the most commonly assessed phenomenological characteristics of memories. This dimension particularly refers to the 'visual clarity' of the memory (Sutin & Robins, 2007). Remote memories tend to be less vivid than recent memories (e.g., Janssen, Rubin, & St. Jacques 2011; Montebarocci et al., 2014), though important and emotional events tend to remain vivid even after several years (e.g., Berntsen & Thomsen, 2005; Luchetti, Montebarocci, Rossi, Cutti, & Sutin, 2014). For example, Talarico and Rubin (2007) tested longitudinally the phenomenology of memories of the September 11th terrorist attack in a sample of undergraduates. Compared to other everyday memories, these memories remained consistently higher in vividness over the 1 year follow-up. Other studies on 'flashbulb memories' (i.e., memories of important public events; Brown & Kulik, 1977) have replicated this finding (e.g., Kvavilashvili, Mirani, Schlagman, Erskine, & Kornbrot, 2010). In general, emotionally intense memories tend to have rich visual details (e.g., Berntsen, 2001; Reisberg, Heuer, McLean, & O'Shaughnessy, 1988). Vivid intrusive recollections are also what characterize many psychological disorders (Brewin, Gregory, Lipton, & Burgess, 2010).

(2) Coherence

Sutin and Robins (2007) defined coherence as "the extent to which the memory retrieved involves a logical story in a specific time and place rather than fragments of the original experience or a merging of many similar experiences" (p. 393). As point out by the authors,

this dimension is somewhat similar to the dimension of 'specificity' described in Singer and colleagues' work (Blagov & Singer, 2004).

When recalling a memory (Conway & Pleydell-Pearce, 2000; Conway et al., 2004), individuals typically move from general knowledge, i.e. lifetime periods and general events, to specific information, i.e. episodes situated in time and place (i.e., "my graduation party"). If an individual is not motivated, or does not have sufficient cognitive resources, he/she likely stops episodic retrieval. As noted before, individuals suffering from depression tend to have limited access to specific event-knowledge information and tend to retrieve memories that are overgeneral (Sumner, 2012). Such deficits have been associated with a worse course of depression (e.g., Hermans et al., 2008; Sumner et al., 2010) and onset of subsequent depressive episodes (e.g., Kleim & Ehlers, 2008). Vague and incoherent memories may be functional to 'avoid' the emotional implication of an event, but, at the same time, incoherence may hinder the beneficial functions that memories serve (e.g., self-understanding, directing behaviors).

It is worth to note here that a large number of studies investigated memory coherence by coding memory narratives (e.g., Blagov & Singer, 2004; McLean, 2008; Reese et al., 2011), linking narrative coherence with positive psychological outcomes (e.g., well-being; Alea, McLean, & Vick, 2010; Baerger & McAdams, 1999). Fewer studies have combined narrative analyses with self-report questionnaires to assess coherence (though see e.g., Rubin, 2011; Sumner et al., 2013; Waters, Bohanek, Marin, & Fivush, 2013).

(3) Accessibility

Accessibility refers to the ease of retrieval of the memory. The more a memory is relevant to the self, the more it will be accessible (Conway & Holmes, 2004; Conway & Pleydell-

Pearce, 2000). In a recent study (Rathbone & Moulin, 2014), memory accessibility was studied in relation to different levels of self-related knowledge. Participants generated "I am" statements about themselves, which were used as cues in an autobiographical fluency task. Statements that were generated first were associated with higher personal significance scores, and with the retrieval of a greater number of memories. Accessibility has also been studied in relation to clinical variables. For example, dysphoric individuals have been found to have less access to autobiographical material (e.g., Joormann & Siemer, 2004; Latorre et al., 2013).

(4) Sensory Details

Sensory Details refer to the sensory information that is re-experienced during retrieval. Along with visual details—which are considered separately in the Vividness dimension—olfactory, auditory, tactile, and gustatory details enhance the subjective feeling of reliving the event in the memory. This type of information has an important role in the construction of autobiographical memories (Conway & Pleydell-Pearce, 2000). Cue modality, indeed, affects memory retrieval (Goddard, Pring, & Felmingham, 2005); for example, odour-cued memories tend to be older and less specific. Moreover, the sensory component is stronger for real than for imagined events (McGinnis & Roberts, 1996; Suengas & Johnson, 1988).

(5) Emotional Intensity

For Sutin and Robins (2007) this dimension refers to the intensity of the emotions experienced both at the time of encoding and at the time of retrieval. As evidenced by Talarico, LaBar and Rubin (2004), the intensity rather than the valence of the emotional experience better predicts autobiographical memory qualities (e.g. Vividness). Walker and colleagues (Walker & Skowronski, 2009; Walker, Skowronski, & Thompson, 2003) have

found, however, a differential fading in emotional intensity for positive vs. negative events, with negative events fading more than positive events over time. Still, emotions associated with important life events fade less with time (Thomsen, Hammershøj Olesen, Schnieber, Jensen, & Tønnesvang, 2012). Memories for stressful or traumatic events have also been found to be highly emotionally intense, especially in individuals with post-traumatic stress symptoms (Rubin, Boals, & Berntsen, 2008; Rubin, Dennis, & Beckham, 2011).

(6) Visual Perspective

Memories may be retrieved from a field perspective (i.e. first-person perspective) in which the individual sees the experience in the memory through his/her own eyes, or from an observer perspective (i.e. third-person perspective) in which the individual sees him or herself in the memory (Nigro & Neisser, 1983; Siedlecki, 2015). The interest in this dimension has recently grown (see Sutin & Robins, 2008a and Rice, 2010 for detailed reviews). Recent memories tend to be recalled from a first-person perspective while remote memories, especially early childhood memories, are more likely retrieved from a third-person perspective (Sutin & Robins, 2008a; e.g., Berntsen & Rubin, 2006). First-person memories tend to be more vivid and emotionally intense (Nigro & Neisser, 1983; Siedlecki, 2015; Talarico et al., 2004) and rated higher on Coherence, Accessibility, Sensory Details, and Time Perspective (Sutin & Robins, 2010).

Several studies have suggested that the adoption of an external point of view may serve to reduce the emotional impact of past events. For example, when visual perspective is experimentally manipulated (see Berntsen & Rubin, 2006; Robinson & Swanson, 1993; Sekiguchi & Nonaka, 2014), changing from first-person to third-person perspective significantly reduces memory-related emotions. Individuals suffering from anxiety or

depressive symptoms are less likely to retrieve memories from a first-person perspective (Bergouignan et al., 2008; D'Argembeau, Van der Linden, d'Acremont, & Mayers, 2006; Lemogne et al., 2006). However, though third-person perspective may serve to distance a traumatic experience from the self, ultimately it may maintain distress over time (Kenny & Bryant, 2007; Sutin & Robins, 2010).

To date, the majority of studies have assessed memory perspective on unidimentional scales in which higher ratings correspond to first-person retrieval (Sutin & Robins, 2007). More recently, however, Rice and Rubin (2009) proposed that field and observer perspectives are not 'mutually exclusive', but both perspectives can be experienced during the same retrieval attempt. Though Rice and Rubin (2009) make a strong argument for field/observer 'independence', further evidence are needed (though see Boyacioglu & Akfirat, 2014).

(7) Time Perspective

Time Perspective refers to the perceived clarity of when the experience in the memory took place, i.e. the 'year', 'day', 'hour'. Researchers suggest that participants' are accurate in dating their autobiographical memories (Shum, 1998). In the literature, temporal details have been evaluated both through analysis of content (e.g., Levine et al., 2002) and self-reported measures (e.g., Boyacioglu & Akfirat, 2014; Sutin & Robins, 2007).

(8) Sharing

A memory can be voluntarily recalled either personally or interpersonally (Fitzgerald & Broadbridge, 2013). In particular, 'talk about' a past experience has shown to affect memory phenomenology, i.e. the amount of emotions and details recalled (e.g., Habermas & Berger, 2011; Harris, Barnier, Sutton, & Keil, 2010; Pasupathi, 2003). How a memory is retrieved also varies on the basis of the teller's personal characteristics (age, gender, personality) and

the responsiveness of the listener (Alea & Bluck, 2003; Lorenzetti & Lugli, 2012). As highlighted by Alea and Bluck (2003) sharing a memory my serve to: (1) create and maintain intimate relationships, (2) teaching/informing others, and/or (3) eliciting and increasing empathy.

(9) Distancing

Distancing refers to the degree to which individuals psychologically distance themselves from the past self in the memory (Sutin & Robins, 2007). In general, people tend to recall achievements and positive experiences as psychologically closer than failures and negative experiences (e.g., Demiray & Freund, 2015; Wilson & Ross, 2003 for a review). In a recent study, Demiray and Janssen (2015) asked participants to report important events of their lives and rate them on a number of qualities, including psychological distance. Psychological distance was associated with lower ratings of vividness and sense of reliving, emotional intensity, importance and rehearsal. In particular, those with high levels of self-esteem felt closer to positive vs. negative memories, in part because they regarded their personal events as more important and rehearsed their memories more frequently. As such, distancing may play an important role in determining positive psychological outcomes.

Distancing may share some similarities with the concept of 'closure' (Beike & Wirth-Beaumont, 2005), that is the degree to which a past experience feels resolved and understood. Closed memories tend to elicit more positive (and less negative) emotions during recall (Crawley, 2010). Moreover, the degree of closure seems to increase when reporting memory in written form, especially when the memory is repeatedly expressed from a third-person perspective (Crawley, 2010).

(10) Valence

Valence refers to the degree to which the experience is perceived as positive or negative and includes the valence of the event and the valence of the emotional experience at the time of event (Sutin & Robins, 2007). A positive bias has been noted in literature (e.g., Walker et al., 2003): Positive memories tend to outnumber negative memories. Some studies have also shown that participants report more details for positive memories than for negative memories (D'Argembeau, Comblain, & Van der Linden, 2003; D'Argembeau & Van der Linden, 2008), though others have not (Comblain, D'Argembeau, & Van der Linden, 2005). For example, Waters et al. (2013) found no differences between memories for highly negative and positive events when retention interval and emotional intensity were controlled. No significant differences were found between traumatic memories and control memories in recent studies (e.g., Rubin, 2011).

Nevertheless, people seem to consider positive events more central to their life story and identity than negative events. The centrality of positive events increases with time, whereas the centrality of negative ones decreases (Berntsen, Rubin, & Siegler, 2011). However, individuals experiencing emotional distress tend to be more likely to consider traumatic or negative events as more central to their personal identity (Berntsen & Rubin, 2007; Berntsen et al., 2011).

2.2 Measuring memory phenomenology

Many studies have used ad hoc, single-item ratings to assess specific memory characteristics, though questionnaire measures have been also applied. Single-items can be useful in some contexts, but multi-item measures are preferable when possible (Sutin & Robins,

2007). Single questions do not always capture the complex nature of the underlying dimension being measured. Instead of asking to participants "How vivid is your memory?", Vividness can be better assessed by asking different questions that cover different facets of the construct (e.g., the visual clarity of the image, the visual details of the people and the object in the memory, etc.). Single-item measures also cannot control for individual differences in response style. For example, some participants may rate all items as high, whereas others may be more conservative in their ratings. Multi-item scales that include both positively and negatively keyed (i.e., reverse-scored) items limit such response artifacts (as pointed out in Sutin & Robins, 2007).

There are some questionnaire measures that have been used in memory research. For example, Johnson et al. (1988) originally developed the Memory Characteristics Questionnaire (MCQ) to differentiate perceived vs. imagined events; specifically, the MCQ consists of 39 items measuring visual/sensory details, complexity, spatial and temporal information, and feelings. Later, Rubin et al. (2003) developed the Autobiographical Memories Questionnaire (AMQ), a measure that assesses belief/recollection as well as specific aspects of phenomenology. The AMQ includes single-items referring to 19 memory 'proprieties': recollection (reliving, back in time) and belief (real/imagine, accurate, testify, persuade), component processes (see, setting, spatial, hear, talk, in words, story, emotions), reported proprieties of the events or the memories (importance, rehearsal, once/many, merged/extended, age of memory). Despite their wide use, psychometric properties of these questionnaires have not been reported or formally tested. Johnson et al. (1988) and Rubin et al. (2003) did not provide an explicit definition of the measured constructs, or an explanation of how they got to their final set of items. In fact, neither the MCQ nor AMQ cover the full range of phenomenological experiences that have been discussed in the literature (Sutin & Robins, 2007).

Only recently, researchers have attempted to provide a psychometrically sound assessment of phenomenology (Boyacioglu & Akfirat, 2014; Luchetti & Sutin, 2015; Sutin & Robins, 2007). Noteworthy is the work of Sutin and Robins (2007). The authors developed the Memory Experiences Questionnaire (MEQ) to be a reliable and valid measure. In particular, the MEQ covers some aspects of phenomenology (i.e. Visual perspective and Distancing) that were not assessed in earlier instruments.

2.2.1 The Memory Experiences Questionnaire (MEQ)

The MEQ is a theoretically driven, psychometrically sound measure of phenomenology. It consists of 63-items, which includes 10 scales, assessing: Vividness, Coherence, Accessibility, Sensory Detail, Emotional Intensity, Visual Perspective, Time Perspective, Sharing, Distancing, and Valence (see above for the definition of the constructs). The length of the scales varies depending on the breadth of the construct (median scale length = 6 item); the number of items ranges from 5 (Accessibility) to 8 (Coherence and Sensory Details). The Coherence scale, for example, includes items that refer to the specificity of the information retrieved as well as to the coherence of the story in mind. The Sensory Details scale also includes items referring to different facets of the domain–i.e. the presence of sounds, smells, tastes in the memory, as well as the reliving sensations associated with the memory. Each scale has an approximately equal number of positively and negatively keyed items. In a typical study, for each retrieved memory, participants indicate how much they agree with each of the items (e.g., "My memory for this event is dim") on a 5-point response scale (from 1 = *strongly disagree* to 5 = *strongly agree*). High scores on a scale represent high levels of the variable being measured. Appendix A lists the items of all 10 MEQ scales.

Using data from large independent samples (N = 941; N = 510; N = 212), Sutin and Robins (2007) tested the psychometric proprieties of the questionnaire for two types of memories: a general (recent) self-defining memory and an earliest (remote) childhood memory. All 10 scales showed high internal reliability (median alpha = .87; range = .72 to .97), and confirmatory factor analyses indicated that a 10-factor solution provided a good fit to the data. In particular, the authors found configural invariance between the general and the earliest memories, suggesting that the underlying structure of phenomenology is similar across different types of memories (Sutin & Robins, 2007). Sutin and Robins also examined the 10 scales in relation to recency, affective content of the memories, and participants' characteristics. For example, positive affective content was associated with higher scores on Vividness, Sensory Detail, Visual Perspective, Time Perspective, Sharing, and Valence, whereas negative content was associated with higher scores on Emotional Intensity and Distancing. Moreover, individuals with higher self-esteem rated their memories as more vivid, coherent, accessible, likely to be retrieved from the first-person perspective, and positively valenced. Since Sutin and Robin's work, the full-questionnaire or its individual scales have been used in several studies, with student samples (e.g., Sutin & Robins, 2010; Sutin & Stockdale, 2011), community samples (e.g., Newby & Moulds, 2011a) and clinical populations (Newby & Moulds, 2011b; Werner-Seidler & Moulds, 2011). An Italian version of the MEQ is also available, and it has been applied in two studies with clinical and non-clinical participants (Luchetti et al., 2014; Montebarocci et al., 2014).

Luchetti and Sutin (2015) recently developed a short form of the MEQ, more easily applicable, which preserves the psychometric proprieties of the original scale (referred hereinafter as to MEQ-SF). In their study, participants (N = 719; N = 352) retrieved and rated

different types of autobiographical memories—i.e. a general self-defining memory and an early childhood memory (Sample 1), a general self-defining memory, and either a positive or a negative academic memory (Sample 2)—and completed measures of psychological distress (i.e. depression, anxiety, and loneliness). On the basis of item content/wording and item-total correlations, the authors reduced the original MEQ scales to approximately one-half of the items[2]. Despite being much shorter, each short-form scale had acceptable internal consistency (see Table 1 for details) and was highly correlated with the corresponding long-form scale (median r = .95). Similar to the full-length scales, the alpha reliabilities for Coherence and Sensory Details were lower than for the other MEQ scales because of the breadth of these constructs. The authors also examined the associations between the short/long MEQ scales and psychological distress. Of note, the short- and long-forms had largely similar associations with the measured variables. In general, participants with higher psychological distress tended to retrieve their memories as less vivid, more incoherent and inaccessible, less temporally clear and more psychologically distant, and from an observer perspective. Such a short form can be useful for several reasons. First, it takes less time to administer, which is critical when time is limited and/or when multiple memories are collected. Second, a shorter, more readable version of the MEQ can be more easily applied in specific populations (e.g., older adults, psychiatric patients). Finally, the MEQ-SF allows the assessment of all 10 phenomenological dimensions without having to rely on single-items or having to choose between the scales.

[2] Since the original scales had good internal consistency, there was strong evidence that each of the items was a good marker of its respective construct. As such, the items of the short scales were selected to maximize the coverage of the domain content (Luchetti & Sutin, 2015). Of note, the authors did not choose the items that would yield the highest internal consistency because that would have led to redundant content that did not adequately sample from around the domain.

It is worth noting that the 10 MEQ scales are moderately interrelated (Montebarocci et al., 2014; Sutin & Robins, 2007), and thus they might not measure distinct constructs. Sutin and Robins (2007), however, recommended maintaining the scales separated. Even the three scales with the highest intercorrelations (i.e., Vividness, Coherence, and Accessibility) had distinct correlates. As such, collapsing these scales into a single superordinate scale can obscure theoretically important relations (Sutin & Robins, 2007).

Table 1 – Long vs. short forms of the MEQ scales

MEQ scales	No. of items		Internal Consistency (median alpha)		Content of the short form
	Long	Short	Long	Short	
Vividness ↑ visually clear	6 (3R)	3 (1R)	0.87	0.74	e.g., "My memory for this event is very vivid". Words as "vivid", "detailed", and "dim" were preferred to "clear", "vague", and "sketchy".
Coherence ↑ logical and coherent	8 (4R)	4 (2R)	0.81	0.67	e.g., "This memory comes back to me in bits and pieces, not as a logical, coherent story". Items that refer to memory specificity were maintained, i.e. events "occurred once at a particular time and place".
Accessibility ↑ easily accessible	5 (3R)	3 (2R)	0.86	0.81	e.g., "This memory was easy for me to recall". Colloquial expressions such "sprang to my mind" or "memory bank" were avoided because difficult to translate into other languages.
Sensory Details ↑ rich sensory details	8 (4R)	4 (2R)	0.73	0.51	e.g., "As I remember the event, I can hear it in my mind". Items that referred to emotional feelings were excluded to avoid content overlap with Emotional Intensity.
Emotional Intensity ↑emotionally intense	6 (3R)	3 (1R)	0.86	0.83	e.g., "The memory of this event evokes powerful emotions". Items with redundant wording were removed.
Visual Perspective ↑first-person perspective	6 (3R)	3 (2R)	0.89	0.85	e.g., "I view this memory as if I was an observer to the experience". Items with redundant wording were removed.
Time Perspective ↑clear time perspective	6 (3R)	3 (1R)	0.85	0.81	e.g., "My memory for the year when the event took place is vague". Each item refers, respectively, to the "year", "day", and "hour" in which the experience took place.
Sharing ↑ often shared	6 (3R)	3 (1R)	0.89	0.87	e.g., "I have talked about this event many times". Items refer to the frequency of 'talking about' the event.
Distancing ↑ psychologically distant	6 (3R)	3 (1R)	0.86	0.86	e.g., "When I recall this memory, I think, ''that's not me anymore". Items refer to the perceived distance of past self.
Valence ↑ positive valenced	6 (3R)	2 (1R)	-	-	e.g., "The overall tone of the memory is positive/negative". The items referring to the general emotional tone of the memory.

Note. This table refer to data reported in Luchetti and Sutin (2015). The median alpha of each scale was calculated across memories of Sample 1 (N = 719) and Sample 2 (N = 352). Participants of Sample 1 retrieved a general self-defining memory and a childhood memory; participants of Sample 2 retrieved a general self-defining memory, and either a positive academic or negative memory.

2.3 Phenomenology across adulthood

A large body of research on aging and memory has demonstrated that older adults are generally deficient in retrieving episodic memories but maintain the capacity to generate self-semantic knowledge (e.g., Ford, Rubin, Giovanello, 2014; Levine et al., 2002; Piolino, Desgranges, Benali, & Eustache, 2002; Piolino, Desgranges, & Eustache, 2009; Ros, Latorre, & Serrano, 2009; St. Jacques & Levine, 2007). For example, Piolino al. (2006) explored differences in autobiographical memory among young (21-34 years), old (60-69 years) and very old (60-69 years) adults, and found an age-related decrease in memory specificity. Memories of old/very old participants, compared to young participants, had general events that lacked spatiotemporal details. Older adults also tended to report less autonoetic recollection and more observer perspective in their autobiographical memories than young adults. Piolino et al. (2010) later replicated these findings, linking deficits in specificity of old participants to deficits in executive function/working memory. Such deficits in the elderly are particularly important as they have been linked to impoverished capacity to imagine or pre-experience the future (Addis, Wong, & Schacter, 2008), higher depression (Ramirez, Ortega, Chamorro, & Colmenero, 2014) and lower well-being (Latorre et al., 2013; Ramirez et al., 2014).

Based on findings cited above, one would expect younger participants to report higher ratings of phenomenology (e.g., Vividness) than older participants. In fact, this is not always the case (e.g., Janssen et al., 2011; Kingo, Berntsen, & Krøjgaard, 2013; Rubin & Berntsen, 2009; Rubin & Schulkind, 1997). For instance, Rubin and Schulkind (1997) found that older adults (over 70 years) reported higher ratings of vividness compared to young adults, for both important and word-cued memories. Similarly, Rubin and Berntsen (2009) had participants (N = 2,000; age range = 15–90) recall memories of recent vs. remote important events, and found age to be

positively correlated with most of the AMQ rating scales. Perhaps, independently of the recency, older adults do possess some phenomenological-rich memories. Singer, Rexhaj, and Baddeley (2007) indeed observed that, despite the tendency to report more general memories, older adults' capacity for retaining well-rehearsed, vivid, and thematically critical memories—i.e. self-defining memories—from across the lifespan remains intact. In a recent study (Martinelli, Anssens, Sperduti, & Piolino, 2013), for example, older adults did not differ in self-defining memories from young adults, but did differ from patients with Alzheimer dementia. The preservation of such memories in healthy subjects provides "a personal, psychological, history of changes to the self" (Conway & Holmes, 2004, p. 462), thereby "ensuring a sense of identity and continuity" across the lifespan (Piolino et al., 2006, p. 522).

Of note, the majority of the existing works have compared small groups of young and old adults (e.g., Ford et al., 2014; Piolino et al., 2010; Piolino et al., 2006; Singer et al., 2007). Fewer studies have been based on large, stratified samples representing the entire adult life span (though see Kingo et al., 2013). Moreover, most studies focused on the specificity/coherence dimension, neglecting other important phenomenological components (e.g., Distancing). Given the potential implications of memory phenomenology at older ages, further studies need to clarify the lifespan trends of autobiographical remembering (Habermas, Diel, & Welzer, 2013).

2.4 Phenomenology over time

As noted by Rubin, Schrauf, and Greenberg (2004), the subjective experience of a memory is not idiosyncratic to the event in the memory; stable individual differences likely contribute to phenomenology continuity across memories and over time (see also Sutin & Robins, 2005). Rubin et al. (2004) tested stability in phenomenology ratings by asking

participants (N = 30 students) to recall the same 20 autobiographical memories at two sessions separated by two weeks. Beyond the moderate stability of each individual memory (correlation within-subjects ~ .50), the authors found a general tendency for participants to report phenomenologically-rich (vs. poor) memories at both sessions (correlations between-subjects ~.80), which were thought to reflect stable individual differences in cognitive (retrieval) style. The question of continuity is of special significance. Some phenomenological dimensions (e.g., vividness, specificity/coherence, emotional intensity) may play a critical role in developing and maintaining psychological distress (e.g., Boelen et al., 2014; Sumner et al., 2013).

To date, however, relatively few studies have assessed autobiographical memory longitudinally. Of note, most of the studies focused on the consistency or the accuracy of the content rather than on the continuity of the subjective experience of affect and phenomenology. One exception is the study of flashbulb memories, for which the question of consistency/continuity has been of substantial interest (e.g., Conway, Skitka, Hemmerich & Kershawz, 2009; Curci & Luminet, 2006; Koppel, Brown, Stone, Coman, & Hirst, 2013; Kvavilashvili et al., 2010; Talarico & Rubin, 2007). Fewer empirical reports have addressed the question for other types of memories (though Bauer, Tasdemir-Ozdes, & Larkina, 2014; McAdams et al., 2006; Thorne, Cutting, & Skaw, 1998). In a recent diary study, Thomsen et al. (2012) compared 'life-story memories' recalled by participants from the diary period (5-months), with 'control memories' randomly selected by experimenters. Results showed that life-story memories not only maintained, but slightly increased, their levels of pleasantness, emotional intensity, goal relevance and importance over time, whereas the level of these characteristics dropped for control memories at the 3-month follow-up. Other researchers have also observed nontrivial levels of continuity in the emotional tone and the motivational themes (e.g., personal

power, achievement) of self-relevant memories, independently of the consistency of their content (McAdams et al., 2006; Sutin & Robins, 2005). However, the question of continuity still remains understudied. For example, further studies are needed to test whether continuity varies as a function of participants' characteristics (e.g., personality).

2.5 Phenomenology and personality

Recently, several studies have examined the link between autobiographical memory phenomenology and personality using the Five-Factor Model of personality (e.g., Rasmussen & Berntsen, 2010; Rubin et al., 2008; Rubin & Siegler, 2004; Sutin & Robins, 2010), otherwise known as the "Big Five" (John & Srivastava, 1999; McCrae & Costa, 1999). The model addresses personality in terms of five broad domains: Neuroticism (the tendency to feel insecure, easily upset, and emotionally unstable), Extraversion (an inclination toward being talkative, assertive, and energetic), Openness (the tendency to be imaginative, creative, and independent-minded), Agreeableness (a disposition toward being altruistic and cooperative) and Conscientiousness (the tendency to be organized, reliable and persistent, and strong-willed). The motivational and emotional processes associated with these traits likely shape memory retrieval. Rubin and Siegel (2004), for example, found that Openness and Extraversion were related to the reliving qualities of participants' memories (e.g., sensory imagery). Similarly, using the AMQ (Rubin et al., 2003), Rasmussen and Berntsen (2010) reported significant correlations of Openness ($p < .01$) with 'physical reaction' (Study 1), 'vividness', 'coherence' and 'reliving' AMQ variables (Study 2). They also observed significant associations between Neuroticism and 'valence', and between Extraversion and 'conversational rehearsal' (but only in Study 1). Other studies, instead, found support for an association between Neuroticism and Conscientiousness

and memory phenomenology (Rubin et al., 2008; Sutin, 2008)—i.e. Neuroticism was linked to the retrieval of emotionally intense memories and to distance the self from such memories, while Conscientiousness was linked to having vivid and coherent memories (Sutin, 2008). While Neuroticism (Harm Avoidance) has been associated with the retrieval of positive memories from a third-person perspective (Lemogne et al., 2009), Conscientiousness has been related to a general tendency toward first-person retrieval (Sutin & Robins, 2010). These traits have also been associated with the construction of negative vs. positive life stories (e.g., Thomsen, Hammershøj Olesen, Schnieber & Tønnesvang, 2014). Of note, the methodological differences across studies, such as the sample size and composition (e.g., the inclusion of participants with high vs. low levels of post-traumatic stress symptoms; Rubin et al., 2008) and the type of memory assessed (i.e., word-cued vs. self-defining memories), likely account for some inconsistencies in results.

Building on McCrae and Costa's (1999) conceptualization of personality, Sutin (2008; see also Sutin & Robins, 2008b) proposed autobiographical memory as one of the mechanisms that mediates *basic tendencies* (i.e. personality traits) and *characteristics adaptations* (i.e., strivings, attitudes, and so on). From the perspective of Five-Factor theory (McCrae & Costa, 1999), characteristic adaptations emerge from the interactions of underlying traits and external influences; the connections between these components are called *dynamic processes* (i.e., cognitive–affective processes)[3]. Neuroticism and Conscientiousness, in particular, appear as

[3] It is worth noting that McCrae and Costa's theorization share some similarities with McAdams's (2001; McAdams & Pals, 2006) model of personality. McAdams (2001) stated that "personality is a complex patterning of traits, adaptations and stories" (p. 112). In his theorization, *dispositional traits* (Level 1), *characteristic adaptations* (Level 2) and *life stories* (Level 3) are equally important levels of personality. McAdams's Level 1 of personality mainly corresponds to McCrea and Costa's basic tendencies—Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. By contrast, characteristic adaptations (Level 2 of personality) are conceived differently in the two models. For McAdams, characteristic adaptations consist of personal action constructs and self-regulatory processes, while, for

critical determinants of individuals' characteristics adaptations in the literature. These traits have been linked to numerous positive/negative psychological outcomes (Friedman & Kern, 2014)—e.g., depression (e.g., Weiss et al., 2009; see also Klein, Kotov, & Bufferd, 2011), well-being and life satisfaction (DeNeve & Cooper, 1998; Steel, Schmidt, & Shultz, 2008), among others. Given that personality influences the construction of memory and that memory influences outcomes also influenced with personality, phenomenology should mediate the relation between these constructs (Sutin, 2008). In other words, phenomenology can be considered one of the dynamic processes that translate basic tendencies into characteristic adaptations. For example, an individual high in Neuroticism may evaluate his/her current life satisfaction based on the subjective experience of his/her most meaningful memories. If those memories are saturated with negative emotions, he/she likely uses that information to determine whether or not he/she feels satisfied with life. Sutin's (2008) results supported the mediating role of content and memory phenomenology. For example, in Study 1 (N = 162), individuals high in Neuroticism reported more somatic complains, in part, because their self-defining memories were saturated with negative affective content and were more emotionally intense. These individuals also tended to distance from their memories and thus had less life satisfaction. In Study 2 (N = 345), positive content, vividness, and coherence partially mediated the relation between Conscientiousness, achievement goals and study skills. Though causal link cannot be drawn, the approach adopted by Sutin has represented an interesting way to study memory and personality.

McCrae and Costa, consist of acquired psychological attributes—i.e., personal strivings, interests, skills, and so on (McCrae, 2003). Although McCrae and Costa specify that dynamic processes are the mechanisms through which basic tendencies are expressed as characteristic adaptations, they only allude to what those processes may be (Sutin, 2008; e.g., selective attention, social comparison, etc.). McCrae and Costa also distinguished basic tendencies and characteristic adaptations from the self-concept, which includes life stories but also other information about the self.

In fact, memories and personality likely reciprocally influence each other. Memories may be one mechanism underlying personality change over long time periods (Sutin & Robins, 2005). For example, how individuals experience and interpret stressful life events likely affect changes in personality across adulthood (e.g., Sutin, Costa, Wethington, & Eaton, 2010), determining in turn adaptive/maladaptive psychological outcomes.

The current research

As previously described, phenomenology is a key aspect of autobiographical memory. Memory phenomenology has been linked to underlining stable dispositions (Singer & Salovey, 1993), as well as to a variety of positive/negative psychological outcomes. Using the Memory Experiences Questionnaire (MEQ), the present research tested the full-range of phenomenological experiences of personally meaningful memories. It is worth to make a distinction between memories formed in laboratory setting versus memories retrieved in naturalistic context. Several memories are episodic, but only few are truly autobiographical. The present research focused on memories that individuals deem particularly important, those that are most likely retrieved in times of need. In other words, the building blocks of individuals' life stories.

A cross-sectional and a longitudinal study were conducted on samples of American and Italian adults. Specifically, the research aimed to examine:

(1) age differences in memory affect and phenomenology (Study 1);

(2) continuity of subjective experiences across memories and over time (Study 2);

(3) how phenomenology contributes to positive and negative psychological outcomes and whether phenomenology mediates the association between personality and these outcomes (Study 1 and Study 2).

Study 1: Autobiographical Memory across the adult lifespan

Autobiographical memories are a touchstone for individuals' self-understanding (Conway, 2005; Singer & Salovey, 1993) and their experience of continuity over time (Prebble et al., 2013). For example, vivid memories often serve as reminders of lessons learned and help to maintain goal engagement (Blagov & Singer, 2004; Sutin & Robins, 2007). The retrieval of specific memories may contribute to more effective problem-solving in problematic situation (e.g., Beaman, Pushkar, Etezadi, Bye, & Conway, 2007; Williams et al., 2006), and likewise determine the capacity to imagining and planning forward in time (e.g., Addis et al., 2008). As adults pass through different developmental stages, differences in memory may emerge. Detailed-rich recollection of personal past has been linked to an overall sense of well-being at older ages (e.g., Latorre et al., 2013; Ramírez et al., 2014), while impoverished memories have been associated with increased depression and state anxiety (e.g., Ramírez et al., 2014). As such, it is important to outline how autobiographical memory changes across adulthood and how it contributes to adaptive/maladaptive psychological outcomes.

Applying a cross-sectional design, Study 1 explored the affective and phenomenological experience of two particular autobiographical memories—a Turning Point Memory and a Childhood Memory—in a large, stratified sample of American adults aged from 20 to 90 years. The study aimed to address the following questions:

- *Are there age differences in memory affect and phenomenology across the adult lifespan?* Age differences in autobiographical memory are most often examined between younger and older adult samples. In general, older adults tend to report fewer episodic details but more semantic information during memory retrieval than younger adults (e.g., Ford et al., 2014; Piolino et al., 2002; Piolino et al., 2006; St. Jacques & Levine, 2007) and a more

positive view of past events (e.g., Schryer & Ross, 2012; Singer et al., 2007). Fewer studies have been based on stratified samples representing the entire adult life span (e.g., Kingo et al., 2013). This latter approach allows exploring different aspects of memory across age, detecting both linear and nonlinear trends age differences across adulthood. On the basis of the literature, it can be hypothesized that phenomenological dimensions like Coherence will increase between early and middle-adulthood, remain stable and slightly decrease after 60 years of age. There is, however, less evidence about trends for other phenomenological dimensions (e.g. Distancing).

- *Is the association between personality and psychological outcomes mediated by autobiographical memory?*

  Memory qualities, like specificity/coherence, have been associated with relevant clinical constructs across ages. For instance, in previous studies, those who report less coherent personal memories have shown higher levels of depression and lower life satisfaction (Baerger & McAdams, 1999; see also Latorre et al., 2013; Waters & Fivush, 2014). Still, stable individual differences in personality functioning (e.g. Neuroticism and Conscientiousness) have found to be associated with memory phenomenology (see above; e.g., Rasmussen & Berntsen, 2010; Rubin & Siegler, 2004). Individuals high in Neuroticism—who are inclined to experience a wide range of negative emotions—may report more emotionally negative memories, while individual high in Conscientiousness—who are inclined to be organized and disciplined—may retrieve more detailed and vivid memories. These traits, in particular, have been linked to numerous psychological health outcomes (e.g., depression; for a review Friedman & Kern, 2014).

Given that personality is associated with the reconstruction of memory and that memory is associated with outcomes also associated with personality, affect and phenomenology have been proposed to mediate the relation between these constructs. Expanding previous works (Sutin, 2008), the present study explores whether memory mediates the relation between Neuroticism and Conscientiousness and positive/negative psychological outcomes: depressive symptoms, overall well-being and life satisfaction (see Figure 1 for the conceptual path model).

It is expected that because these traits have been linked with risk of depression (Weiss et al., 2009), and because depression has been linked with impoverished memory (e.g., Söderlund, Moscovitch, Kumar, & Daskalakis, 2014) and greater emotional reactivity to life events (e.g., Bylsma, Taylor-Clift, & Rottenberg, 2011), dimensions like coherence and emotional intensity will partially mediate the personality-depression association. Specifically, individuals high in Neuroticism are likely to experience more depressive symptoms because their memories are less coherent, but more emotionally intense, and saturated with negative affect. By contrast, individuals high in Conscientiousness are likely to experience fewer depressive symptoms because their memories are more vivid, coherent, and saturated with positive affect. On the other end, given that low Neuroticism and high Conscientiousness have been linked with overall well-being and life satisfaction (DeNeve & Cooper, 1998; Steel et al., 2008), and that autobiographical memory has been related to such outcomes as well (e.g., Latorre et al., 2013; Sutin, 2008; Waters & Fivush, 2014), affect and phenomenology are also proposed as possible mediators of the personality-well-being association. Specifically, individuals low in

Neuroticism and high in Conscientiousness are likely to show higher levels of well-being because they have more vivid, coherent, and less psychologically distant memories.

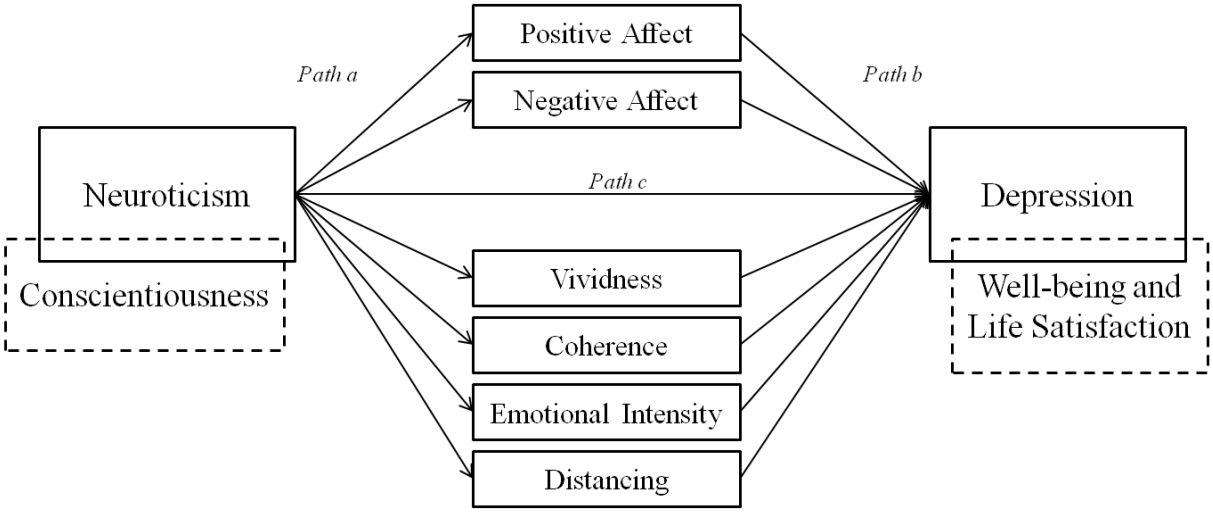


Figure 1: Path model of the mediation of the effect of personality on positive and negative psychological outcomes through memory affect and phenomenology.

Autobiographical memory can be considered as a dynamic expression of personality functioning that partially explains adaptive/maladaptive psychological outcomes (Sutin, 2008; see McCrea & Costa, 1999). Though causal links cannot be drawn, this approach potentially clarifies the mechanisms behind long-term positive/negative adaptations.

Method

Participants and procedure

The current study utilized an on-line survey created with Qualtrics software (www.qualtrics.com). The survey link was distributed by Survey Sampling International (SSI; www.surveysampling.com), a sampling company that provided an Internet sample of different age groups from the United States, balanced equally by gender and race/ethnicity.

Participants were asked to complete a memory task (Block 1)—i.e. a Turning Point and a Childhood Memory (see below for details)—and a series of self-report questionnaires (Block 2). A total of 1,075 respondents completed at least part of the survey (age *M* = 45.6 [*SD* = 15.1], range = 20-87; education [years], *M* = 14.8 [*SD* = 2.5])[4]. The sample comprised five age groups: 20-29 (*N* = 201), 30-39 (*N* = 199), 40-49 (*N* = 225), 50-59 (*N* = 229), and over 60 (*N* = 221). The order of memory recall, as well as the order of survey blocks, was counterbalanced across participants[5]. On average, it took 45 minutes to complete the survey. Sample characteristics are reported in Table 1. Means, standard deviations, alpha reliabilities and intercorrelations for all variables are given in Table 2 (Supplementary Material of Study 1 is presented in Appendix B).

Table 1 – Sample Characteristics

age group:	20-29	30-39	40-49	50-59	over 60	**Total**
Sex (% males)	45.8	49.2	47.1	46.3	48.4	**47.3**
Race/ethnicity (%)						
African Americans	22.9	20.1	24.9	24.0	24.0	**23.3**
Other ethnic groups	24.9	29.1	22.7	21.4	19.9	**23.4**
Marital Status (%)						
Single/never married	55.0	28.4	21.4	16.4	10.5	**25.7**
Married	23.5	52.3	56.7	55.3	58.6	**49.8**
In a committed relationship	19.0	13.7	10.3	8.4	2.7	**10.6**
Separated/Divorced	1.5	4.6	10.3	16.8	20.9	**11.2**
Widowed	1.0	1.0	1.3	3.1	7.3	**2.8**

Note. *N* = 1,075 that recalled at least one memory. Specifically, *N* = 1,057 had Turning Point and *N* = 1,007 had Childhood memory; 944 respondents had valid data for both types of memory.

[4] On-line data were screened creating a series of flag variables. First, IP address was used to identify possible duplicate cases (i.e. those who completed the survey more than one time). Second, open-ended answers were examined to identify invalid cases (e.g., non-words, non-sense memory narratives such as "life is beautiful") and respondents who gave the same score to every item of self-report questionnaires were recognized as s*traight-liners*. As an additional control, *speeders* (i.e. those who took less than 10 minutes to complete the survey) were flagged. A bogus item was also included in the survey (i.e. "Soccer is played with a bat", from 1= *strongly disagree* to 5 = *strongly agree*).

[5] Forty-seven percent of the sample completed the Memory Task (Block 1) first and 53% of the sample completed the Questionnaires (Block 2) first. Half of the participants recalled the Turning Point Memory first, while the other half recalled the Childhood Memory first. Independent t-tests were performed to test order effects on the memory measures; only 12 of 52 tests were significant.

Memory Task

Using an adaptation of the Life Story Interview instructions (McAdams, 2008), participants were asked to recall (write) two 'key' moments of their past lives (see Appendix A for details). Specifically, they were asked to write about an important life-changing event (i.e., Turning Point Memory): *"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. Please describe what happened, where and when, who was involved, and what you were thinking and feeling."* And, to describe an important event from their early childhood years (i.e., Childhood Memory): *"Think about an event from your early childhood that stands out in some way. Please describe this event in detail. What happened, where and when, who was involved, and what were you thinking and feeling?"* Participants rated the affect and phenomenological experiences of each memory, reporting their age at the time of the recalled event.

Emotions during recall. After describing each memory, participants rated their emotions during recall on a 5-point response scale (from 1 = *very slightly or not at all* to 5 = *extremely*). They rated six positive (proud, inspired, exited, strong, determined, enthusiastic) and six negative emotions (upset, scared, ashamed, hostile, guilty, distressed) drawn from the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The individual emotions were composited into Positive Affect (PA) and Negative Affect (NA) scales for each memory. Cronbach's alphas of the PA and NA scales were above .84 for both memories.

Memory phenomenology. Participants completed the 31-item short form of the MEQ (Luchetti & Sutin, 2015), rating Vividness, Coherence, Accessibility, Sensory Details, Emotional Intensity, Visual Perspective, Time Perspective, Sharing, Distancing, and Valence on 5-point response scale (from 1 = *strongly disagree* to 5 = *strongly agree*) for each memory type. Despite their short-length, the alphas of the scales were acceptable for both the Turning Point and Childhood Memory (see Table 2). Except for Coherence, Accessibility, Sensory Details (alphas ~ .55), scales reliability ranged from .62 (i.e. Visual Perspective) to .86 (i.e. Valence) for the Turning Point Memory (median alpha across scales = .65) and from .60 (i.e. Visual Perspective) to .87 (i.e. Valence) for the Childhood Memory (median alpha across scales =.72)[6].

Other self-report measures

Personality. Participants completed the Big Five Inventory (BFI; John & Srivastava, 1999), a 44-item measure of Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness. Respondents were asked to rate each item (e.g. "I see Myself as Someone Who..." "Is depressed, blue") on a 5-point response scale (from 1 = *strongly disagree* to 5 = *strongly agree*). In the present study, the focus is on the Neuroticism and Conscientiousness domains; alphas were above .80 for both scales.

[6] The alpha reliabilities of MEQ scales were, in general, lower for Turning Point Memory than for Childhood Memory. The alpha of the Coherence and Sensory Details scales were ~.55 for both memory types. Indeed, these scales include items that cover different aspects of the measured constructs, and the item heterogeneity could affect internal consistency. For Coherence, items assess the specificity of information retrieved as well as the coherence of the memory in mind. For Sensory Details, items assess the presence of sounds, smells, tastes in the memory, as well as the reliving sensations associated with the memory. Accessibility was the least reliable scale across the two memories (.53 for Turning Point Memory and .58 for Childhood Memory). Although the alphas for these scales were poor, Coherence, Accessibility and Sensory Details were retained because they correlated with personality and outcome variables in the expected direction. Of note, McCrae and colleagues (McCrae, 2014; McCrae, Kurtz, Yamagata, & Terracciano, 2011) have recently suggested that other criteria besides alphas should be considered to quantify the validity of self-report scales: (1) longitudinal stability, (2) heritability, and (3) cross-observer agreement. These criteria are largely unrelated to internal consistency (see McCrae, 2014; McCrae et al., 2011 for further details). Nevertheless, as note in the Discussion section, results should be interpreted with caution; replication is needed to strength the findings concerning these dimensions.

Psychological Distress (i.e. depression). Participants completed the Patient Health Questionnaire depression module (PHQ-9; Spitzer, Kroenke, & Williams, 1999). They rated the frequency of 9 depressive symptoms (e.g. "feeling tired or having little energy") on a 4-point response scale (from 0 = *not at all* to 3 = *nearly every day*). The PHQ-9 score ranged from 0 to 27; higher scores reflect higher symptoms of depression. 22.2% of the present sample scored ≥ the threshold score of 10 for moderate to severe symtomatology (Kroenke, Spitzer, & Williams, 2001).

Well-being (i.e. positive functioning and life satisfaction). Participants answered the 8-item Flourishing Scale (FS; Diener et al., 2009) and a single item on life satisfaction (i.e. "I am satisfied with my life") on a 5-point response scale (from 1 = *strongly disagree* to 5 = *strongly agree*). FS provides an overall index of well-being and positive functioning; higher scores reflect respondents' positive perception of themselves in various areas of functioning—e.g. experiencing positive relationships and having purpose in life.

Table 2 – Means and Standard Deviations, Alpha Reliabilities, and interrelations among variables

Variables	M	SD	N	C	PHQ-9	FS	LS	PA	NA	1	2	3	4	5	6	7	8	9	10
Neuroticism (N)	2.68	0.8	(.84)																
Conscientiousness (C)	3.93	0.6	-.49**	(.81)															
Depression (PHQ-9)	5.88	6.6	.54**	-.49**	(.93)														
Positive Functioning (FS)	4.03	0.7	-.49**	.52**	-.34**	(.91)													
Life Satisfaction (LS)	3.74	1.1	-.45**	.28**	-.29**	.65**	--												
Turning Point Memory																			
Positive Affect (PA)	3.18	1.3	-.25**	.15**	-.13**	.30**	.26**	(.91)											
Negative Affect (NA)	2.08	1.0	.28**	-.21**	.30**	-.17**	-.14**	-.40**	(.84)										
1. Vividness	4.12	0.8	-.18**	.34**	-.22**	.30**	.14**	.19**	-.05+	(.63)									
2. Coherence	3.83	0.8	-.19**	.31**	-.24**	.20**	.06*	.06*	-.08*	.50**	(.57)								
3. Accessibility	4.16	0.8	-.24**	.36**	-.30**	.25**	.13**	.30**	-.32**	.48**	.41**	(.53)							
4. Sensory Details	3.66	0.8	-.20**	.30**	-.20**	.30**	.18**	.21**	-.06	.59**	.36**	.37**	(.55)						
5. Emotional Intensity	3.92	0.9	.00	.17**	-.02	.17**	.05	.01	.21**	.42**	.27**	.18**	.48**	(.72)					
6. Visual Perspective	3.43	0.9	-.05	.09**	-.09**	.02	-.00	.01	-.12**	.20**	.21**	.26**	.08**	.05+	(.62)				
7. Time Perspective	3.95	0.9	-.20**	.32**	-.19**	.29**	.13**	.24**	-.10**	.64**	.47**	.43**	.59**	.38**	.15**	(.67)			
8. Sharing	3.16	1.2	-.12**	.14**	-.09**	.22**	.18**	.36**	-.16**	.30**	.07*	.30**	.28**	.12**	.03	.29**	(.81)		
9. Distancing	3.20	1.2	.10**	-.07*	.09**	-.05+	-.12**	-.28**	.24**	-.11**	-.09**	-.17**	-.19**	.00	-.08*	-.15**	-.24**	(.81)	
10. Valence	3.57	1.4	-.25**	.19**	-.24**	.25**	.20**	.68**	-.56**	.15**	.11**	.40**	.17**	-.11**	.06*	.21**	.37**	-.31**	(.86)
Age at the event	24.8	12.0	-.05+	.04	-.06+	.01	-.01	.05	.02	.14**	.09**	.04	.14**	.13**	.10**	.18**	.16**	.00	-.01
Childhood Memory																			
Positive Affect (PA)	2.48	1.3	-.16**	.07*	-.06+	.16**	.16**	(.92)											
Negative Affect (NA)	2.06	1.1	.15**	-.12**	.27**	-.11**	-.06+	-.36**	(.85)										
1. Vividness	3.76	0.9	-.14**	.30**	-.11**	.20**	.07*	.13**	.05	(.73)									
2. Coherence	3.82	0.8	-.15**	.30**	-.18**	.19**	.04	-.10**	-.03	.52**	(.59)								
3. Accessibility	3.99	0.9	-.17**	.32**	-.23**	.18**	.08*	.12**	-.26**	.49**	.47**	(.58)							
4. Sensory Details	3.41	0.8	-.16**	.28**	-.13**	.22**	.10**	.18**	.06	.61**	.34**	.37**	(.59)						
5. Emotional Intensity	3.38	1.0	.01	.14**	.02	.11**	-.01	.14**	.27**	.42**	.15**	.11**	.53**	(.78)					
6. Visual Perspective	3.22	0.9	-.04	.11**	-.08*	-.00	-.02	-.08*	-.07*	.16**	.22**	.21**	.11**	.00	(.60)				
7. Time Perspective	3.38	1.1	-.17**	.27**	-.10**	.20**	.10**	.24**	.06	.63**	.32**	.31**	.58**	.42**	.04	(.71)			
8. Sharing	2.60	1.1	-.10**	.06	-.02	.12**	.12**	.30**	-.09**	.20**	.03	.16**	.18**	.04	-.04	.24**	(.79)		
9. Distancing	3.22	1.1	.09**	-.03	.09**	-.04	-.12**	-.26**	.19**	-.11**	-.12**	-.19**	-.16**	-.06+	-.09**	-.11**	-.17**	(.77)	
10. Valence	3.27	1.4	-.17**	.07*	-.19**	.09**	.11**	.65**	-.63**	.02	-.04	.23**	.07*	-.12**	.04	.08*	.23**	-.29**	(.87)
Age at the event	7.97	3.40	-.06+	.02	-.01	-.02	-.01	.16**	.11**	.05	-.08**	-.04	.08**	.15**	-.02	.15**	.01	.00	.01

Note. N = 1,057 had Turning Point and N = 1,007 had Childhood memory. Alpha reliabilities are shown on the diagonal. Although the alpha for Coherence, Accessibility and Sensory Details were poor, these scales were retained because they correlated with personality and outcome variables in the expected direction.

$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$.

Results

The results are divided into two sections that refer to the two main research questions. The first section examined age differences in memory affect and phenomenology across the adult lifespan. In particular, both linear and quadratic trends were tested for Turning Point and Childhood Memory, separately. The second section focuses on the interrelation between memory, personality and positive/negative outcome variables: depression, positive functioning and life satisfaction. In particular, specific dimensions—i.e. Positive and Negative Affect, Vividness, Coherence, Emotional Intensity and Distancing—were tested as possible mediators of the association between Neuroticism and Conscientiousness and the psychological outcomes.

(1) Age differences in memory affect and phenomenology across the adult lifespan

To test the effect of age on memory affect and phenomenology, regression analyses were conducted for each memory, controlling for sex, race/ethnicity, education and memory recency (i.e. age at the time of the recalled event). Potential non-linear relations were examined by including the squared term of age in the model (Verhaeghen & Salthouse, 1997). Although a linear increase in specific dimensions (e.g. Coherence) is expected, a decrease is also hypnotized in later ages. Aiken and West's (1991) procedure was used to test the moderating role of sex on age-related phenomenological changes.

Results indicated that there are age differences in memory affect and phenomenology across adulthood. For the Turning Point memory, an effect of age was found for most of the MEQ scales (highest β was .18 for Coherence), except for Visual Perspective and Sharing (see Table 3 for details). Specifically, a linear increase was observed for the Vividness, Coherence, Accessibility, Sensory Details, Time Perspective and Valence scales; a linear decrease was found for Distancing. That is, with age, participants tended to report more intense phenomenological

qualities—i.e. they rated their Turning Point Memory as more vivid, coherent, easily accessible and positively valenced, as having more sensory details and a clearer time perspective, and perceived them as less psychologically distant (Figure 2, Section a). However, a quadratic trend was also found for Accessibility ($p < .01$), Sensory Details and Emotional Intensity ($p < .10$); that is, these qualities increased in early adulthood, stabilised during mid-life and slightly decreased at later ages. A linear decrease with age was observed for the Negative Affect scale of the PANAS ($\beta = -.12$, $p < .001$), whereas no effect of age was found for the Positive Affect scale ($\beta = .01$, $p = .764$).

Similarly, there were age differences in most of the phenomenological qualities of the Childhood Memory (except Distancing and Valence dimensions; see Table 3). Specifically, a linear increase was observed with age for Vividness, Coherence, Accessibility, Sensory Details, Visual Perspective, Time Perspective (highest β was .16 for Coherence), while a linear decrease was found for Sharing (Figure 2, Section b). That is, older participants tended to report a more vivid and coherent Childhood Memory, rated them as more easily accessible, as having more sensory details and a clearer time perspective, retrieved them from a first-person visual perspective, but shared them less with others. A quadratic trend was also observed for Coherence ($p < .10$), Accessibility and Emotional Intensity ($p < .05$); these phenomenological qualities tended to remain roughly stable at older ages. No effect was observed for either the Positive or Negative Affect scales (βs ~ -.02, ps > .400).

Of note, recency (i.e., the age at the time of the event) was associated with memory phenomenology but did not account for the age differences: Recent memories tended to have

more intense phenomenological qualities (e.g., more Emotional Intensity). Though small in size, the effect of age was generally larger than the effect of recency (median $\Delta \sim .05$ across scales)[7,8].

There were also differences in phenomenology by gender. Specifically, for the Turning Point memory, women scored higher than men on Vividness, Sensory Details, Emotional Intensity, Visual and Time Perspective, while men score higher on Valence. Moreover, sex moderated the effect of age on Coherence ($\beta = -.06$, $p = .041$): Women reported more coherent memories than men, especially in early adulthood. No other significant interactions were found between age and sex for the Turning Point memory. Similarly, women rated their Childhood Memory as more emotionally intense and rich in sensory details and less distanced from the self than men, differences that were apparent across the different age groups.

[7] Of 1,075 participants, only 78 (7.3%) were flagged as *speeders* (i.e., took less than 10 minutes to complete the survey). When excluding *speeders*, the observed effects of age on memory remain significant. Moreover, results held when additionally controlling for recall/block order in the regression models.

[8] Given that depression symptoms (Sutin et al., 2013) and subjective well-being (Ramsey & Gentzler, 2014) changes across the adult life span, these variables were included as covariates in the regression models. Though reduced, the effect of age on phenomenology remained significant when controlling for depression scores; the only exceptions were for Sensory Details ($p > .05$ for both memory), Time Perspective and Valence ($p > .05$ for Turning Point). The effect of age remained significant for all dimensions when controlling for the well-being variables. No significant interactions were observed between age and either depression or well-being.

Table 3 – Effect of Age on Memory Phenomenology

Variables	Vividness		Coherence		Accessibility		Sensory Details		Emotional Intensity		Visual Perspective		Time Perspective		Sharing		Distancing		Valence	
	B(SE)	β	B(SE)	β	B(SE)	β	B(SE)	β	B(SE)	β	B(SE)	β	B(SE)	β	B(SE)	β	B(SE)	β	B(SE)	β
Turning Point Memory																				
Age at the event (recency)	.01(.00)	.08*	.00(.00)	.02	.00(.00)	-.01	.01(.00)	.09**	.01(.00)	.11**	.01(.00)	.07*	.01(.00)	.14**	.02(.00)	.17**	.00(.00)	.04	-.00(.00)	-.05
Age Centered	.01(.00)	.16**	.01(.00)	.18**	.01(.00)	.13**	.01(.00)	.11**	.00(.00)	.06^{+}	.00(.00)	.06^{+}	.01(.00)	.09**	-.00(.00)	-.03	-.01(.00)	-.11**	.01(.00)	.09**
Age Squared	-.00(.00)	- .02	.00(.00)	-.05	.00(.00)	-.08**	.00(.00)	-.06^{+}	.00(.00)	-.06^{+}	.00(.00)	-.05	-.00(.00)	.00	-.00(.00)	-.02	.00(.00)	.03	.00(.00)	.00
Sex	.13(.05)	.08*	.05(.05)	.03	.08(.05)	.04	.12(.05)	.07*	.23(.06)	.12**	.13(.06)	.07*	.15(.06)	.08**	.05(.08)	.02	-.03(.08)	-.01	-.21(.09)	-.07*
Race (African American)	.09(.06)	.04	.08(.07)	.04	.06(.07)	.03	.08(.06)	.04	.01(.07)	.00	-.27(.07)	-.12**	.20(.07)	.09**	.05(.09)	.02	.22(.10)	.08*	.20(.11)	.06^{+}
Race (Other ethnic groups)	-.11(.06)	-.05	-.00(.07)	.00	-.15(.07)	-.08*	-.02(.06)	-.01	-.12(.07)	-.06^{+}	-.28(.07)	-.13**	.01(.07)	.00	-.16(.09)	-.06^{+}	-.10(.09)	-.04	.09(.11)	.03
Education (years)	.01(.01)	.02	.02(.01)	.05	.05(.01)	.14**	-.03(.01)	-.10**	.00(.01)	.01	.04(.01)	.12**	-.00(.01)	-.01	.00(.01)	.03	-.02(.01)	-.04	.01(.02)	.02
Adjusted R^2	.05		.03		.04		.04		.03		.04		.05		.02		.02		.01	
Childhood Memory																				
Memory Age (recency)	.01(.01)	.05	-.02(.01)	-.07*	-.01(.00)	-.03	.02(.01)	.08*	.05(.01)	.16**	-.00(.01)	-.01	.04(.01)	.12**	.00(.00)	-.00	-.00(.01)	-.01	-.00(.01)	-.00
Age Centered	.01(.00)	.11**	.01(.00)	.16**	.01(.00)	.12**	.00(.00)	.07*	.00(.00)	.04	.00(.00)	.08*	.01(.00)	.11**	-.01(.00)	-.09**	-.00(.00)	-.05	.00(.00)	.05
Age Squared	.00(.00)	-.03	.00(.00)	- .06^{+}	.00(.00)	-.08*	.00(.00)	-.05	.00(.00)	-.07*	-.00(.00)	-.02	.00(.00)	-.02	-.00(.00)	-.00	.00(.00)	.00	.00(.00)	.04
Sex	.08(.06)	.04	.05(.05)	.03	.07(.06)	.04	.13(.05)	.08*	.14(.07)	.06*	.06(.06)	.03	.07(.07)	.03	-.06(.07)	-.03	-.15(.07)	-.07*	-.00(.10)	-.00
Race (African American)	.21(.08)	.09**	.05(.07)	.03	.02(.07)	.01	.08(.07)	.04	.01(.09)	.00	-.08(.08)	-.03	.25(.09)	.10**	.06(.09)	.02	.27(.09)	.10**	-.05(.12)	-.01
Race (Other ethnic groups)	-.04(.07)	-.02	-.08(.07)	-.04	-.09(.07)	-.04	-.03(.06)	-.02	.03(.08)	.01	-.14(.07)	-.07^{+}	.14(.08)	.06^{+}	.05(.09)	.02	.03(.09)	.01	.12(.12)	.04
Education (years)	-01(.01)	-.05	.01(.01)	.03	.01(.01)	.04	-.01(.01)	-.04	-.02(.01)	-.05	.01(.01)	.03	-.06(.01)	-.14**	-.02(.01)	-.04	-.03(.01)	-.08*	.01(.02)	.02
Adjusted R^2	.02		.03		.02		.02		.03		.01		.05		.00		.01		.00	

Note. B = Unstandardized regression coefficient; SE = Standard Error of B; β = Standardized regression coefficient.
$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$.

(a) Turning Point Memory

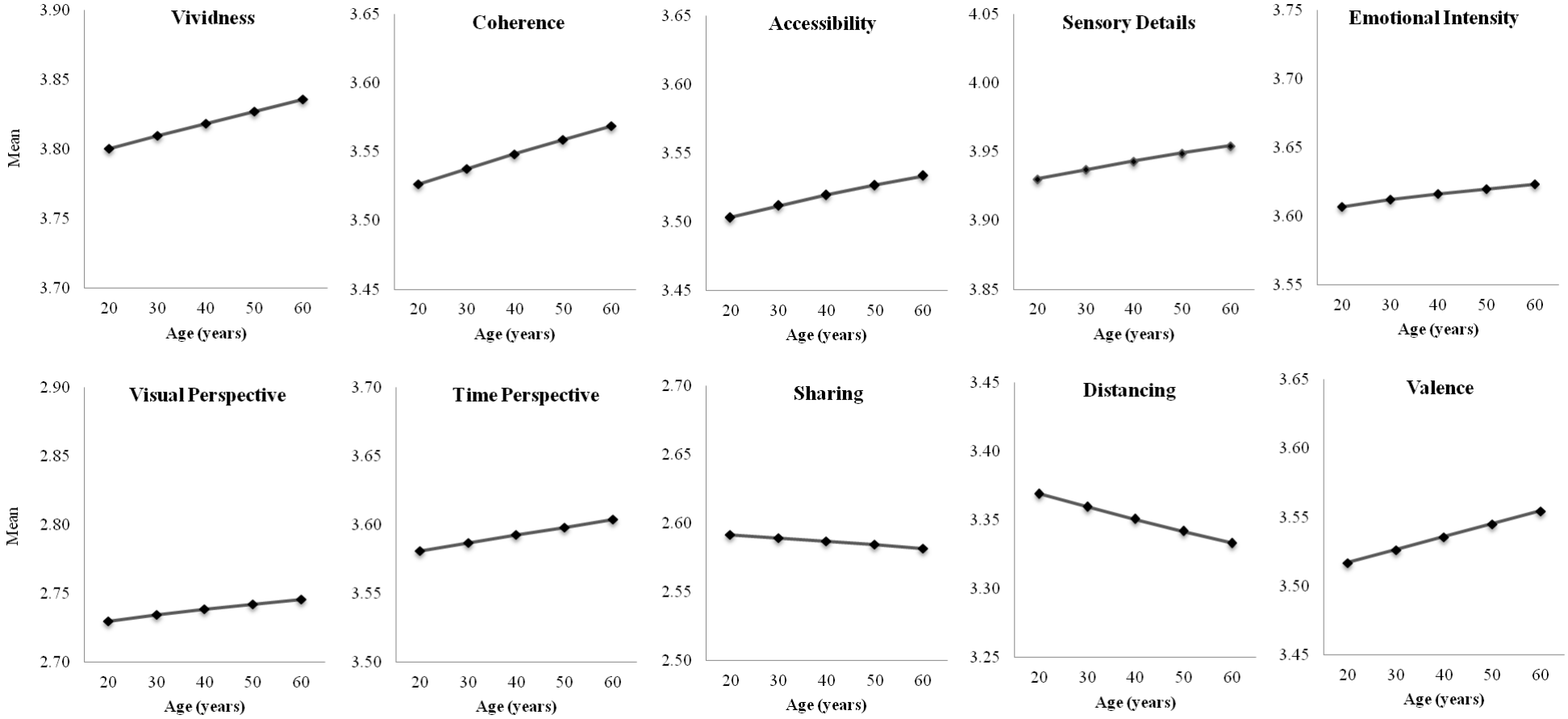


Figure 2 – Section (a): Turning Point Memory. Regression lines of each phenomenological dimensions, adjusted for demographic factors and memory recency.

(b) Childhood Memory

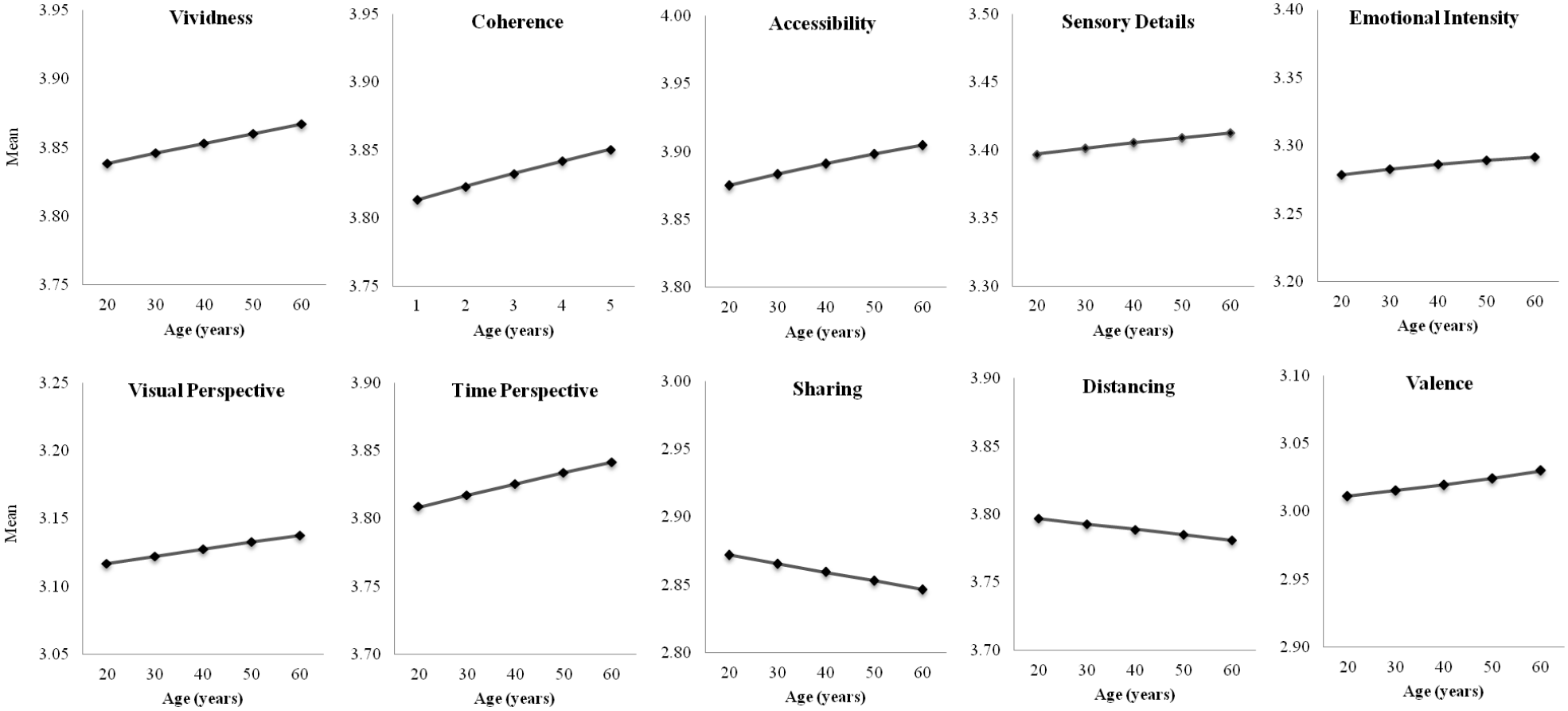


Figure 2 – Section (b): Childhood Memory. Regression lines of each phenomenological dimensions, adjusted for demographic factors and memory recency.

(2) Memory as potential mediator of the effect of personality on outcome variables

As expected, Neuroticism correlated positively with depressive symptoms and negatively with positive functioning and life satisfaction, whereas Conscientiousness correlated negatively with depressive symptoms and positively with the well-being variables. Neuroticism and Conscientiousness were also related significantly to memory affect and phenomenology (see Table 2 above). Specifically, Neuroticism correlated positively with Negative Affect and Distancing, and negatively with Positive Affect, Vividness and Coherence, across memories; it was, however, unrelated to Emotional Intensity. Conscientiousness correlated positively with Positive Affect, Vividness, Coherence, and Emotional Intensity, and negatively with Negative Affect and Distancing. Both personality and the memory variables were related to the psychological outcomes.

Next, these memory variables were tested as possible mediators between personality (i.e. Neuroticism and Conscientiousness) and the psychological outcomes. The SPSS macro developed by Preacher and Hayes (2008) was used to test multiple mediators via bootstrapping. This procedure allows testing potential mediators simultaneously and thus it is useful for the present research given that memory variables are not completely independent. It provides both the indirect effect of each variable, conditional on the effect of all of the other mediators, and the total indirect effect of all proposed mediators (Preacher & Hayes, 2008). Mediation analyses were run for each memory separately, using personality scores (Neuroticism or Conscientiousness) as predictors, Positive Affect, Negative Affect, Vividness, Coherence, Emotional Intensity and Distancing as mediators, and outcome variables of interest (depression, positive functioning or life satisfaction) as the criterion (controlling for demographic variables). The bootstrap estimates presented here are based on 5,000 bootstrap samples.

When considering negative psychological outcomes (i.e. depressive symptoms), mediation analyses partially supported the hypothesized model. Table 4 shows the indirect effects of personality on depressive symptoms through the proposed mediators, and Table 5 shows the path coefficients for each personality dimension. As expected, for both memory types, Coherence and memory affect significantly mediated the neuroticism-depression association. Participants high in Neuroticism reported more depressive symptoms, in part, because their memories were incoherent and more negative (and less positive) in affect. A somewhat opposite pattern of mediation was found for the conscientiousness-depression association. In particular, participants high in Conscientiousness rated their Turning Point (but not Childhood Memory) as less affectively negative and as more coherent, which were in turn qualities related to fewer depressive symptoms.

Table 4 – Mediation of the Effect of Personality on Depressive Symptoms through Memory Affect and Phenomenology

	Turning Point			Childhood Memory		
Variable	B(SE)	BC 95% CI		B(SE)	BC 95% CI	
Neuroticism						
Positive Affect	- .118(.059)*	- .249	- .014	- .090(.046)*	- .198	- .017
Negative Affect	.240(.076)*	.103	.403	.200(.066)*	.091	.352
Vividness	.092(.045)*	.021	.201	.004(.032)	- .058	.073
Coherence	.079(.042)*	.012	.179	.050(.034)*	.000	.142
Emotional Intensity	- .000(.007)	- .018	.014	- .001(.014)	- .033	.025
Distancing	.002(.019)	- .038	.038	- .001(.018)	- .039	.036
Total	.295(.083)*	.137	.466	.161(.065)*	.043	.300
Conscientiousness						
Positive Affect	.020(.052)	- .076	.132	.027(.033)	- .021	.120
Negative Affect	- .269(.087)*	- .472	- .121	- .199(.080)*	- .400	- .074
Vividness	- .153(.108)	- .383	.044	.049(.095)	- .135	.239
Coherence	- .180(.094)*	- .379	- .008	- .090(.090)	- .279	.076
Emotional Intensity	.075(.050)	- .009	.194	.013(.044)	- .068	.109
Distancing	- .003(.020)	- .050	.035	- .006(.014)	- .057	.011
Total	- .509(.139)*	- .792	- .247	- .207(.130)	- .480	.033

Note. N = 971 for Turning Point and N = 931 for Childhood Memory. Demographic factors (i.e. age, age squared, sex, race/ethnicity) are included as covariates in the model. B = non-standardized coefficient; SE = standard error of B; BC = bias corrected; CI = confidence interval; 5,000 bootstrap samples.
*$p < .05$.

The memory characteristics did not completely mediate personality's association with depressive symptoms; neuroticism and conscientiousness still had significant direct effects. Mediation effects were modest in magnitude ($\Delta\beta$ ~.05 and ~.02, for Turning Point and Childhood Memory, respectively). Vividness, Emotional Intensity and Distancing did not mediate the relation between personality and depressive symptoms in either memory.

Table 5 – Coefficients for the Mediation of the Effect of Personality on Depressive Symptoms through Memory Affect and Phenomenology

	Turning Point				Childhood Memory			
	Memory (Path a)		Depression (Path b)		Memory (Path a)		Depression (Path b)	
Variable	B(SE)	β	B(SE)	β	B(SE)	β	B(SE)	B
Neuroticism								
Positive Affect	- .401(.053)	- .244**	.297(.127)	.070*	- .246(.054)	- .153**	.372(.135)	.086**
Negative Affect	.320(.041)	.252**	.756(.166)	.137**	.194(.044)	- .148**	1.092(.162)	.206**
Vividness	- .156(.032)	- .157**	- .568(.230)	- .081*	- .135(.038)	- .120**	- .032(.212)	- .005
Coherence	- .159 (.034)	- .154**	- .477(.205)	- .071*	- .130(.034)	- .127**	- .390(.220)	- .057+
Emotional Intensity	.001(.038)	.001	.071(.180)	.012	.008(.043)	.006	- .237(.171)	- .043
Distancing	.140 (.049)	.096**	.013(.132)	.003	.120(.045)	.089**	- .008(.145)	- .002
	Path c		Direct Effect		Path c		Direct Effect	
	3.756(.193)	.537**	3.464(.200)	.495**	3.777(.195)	.542**	3.616 (.195)	.519**
Conscientiousness								
Positive Affect	.332(.072)	.154**	.064(.135)	.015	.173(.072)	.082*	.161(.144)	.037
Negative Affect	- .308(.054)	- .185**	.873(.179)	.159**	- .199(.059)	- .115**	1.011(.176)	.190**
Vividness	.396(.041)	.303**	- .378(.250)	- .054	.409(.049)	.273**	.118(.229)	.019
Coherence	.367(.044)	.269**	- .482(.221)	- .072*	.360(.044)	.267**	- .255(.239)	- .038
Emotional Intensity	.240(.050)	.158**	.307(.194)	.051	.228 (.056)	.138**	.057(.184)	.010
Distancing	- .135(.064)	- .070*	.027(.142)	.006	- .039(.060)	- .022	.181(.157)	.035
	Path c		Direct Effect		Path c		Direct Effect	
	-3.828(.273)	- .415**	- 3.320(.289)	- .360**	-3.964(.278)	- .431**	-3.757(.288)	- .409**

Note. B = non-standardized coefficient; SE = standard error of B; β = standardized coefficient.
+ p<.10. *p<.05. **p<.01.

For well-being, other phenomenological dimensions emerged as relevant mediators (Table 6). For both memory types, Distancing and Positive Affect significantly mediated the association between neuroticism and FS scores. Participants high in Neuroticism perceived their memories as psychologically distant and rated them as less affectively positive, which were, in turn, aspects that were associated with lower overall well-being. Moreover, Vividness (for Turning Point only) and Coherence (for Childhood Memory only) emerged also as significant mediators of the neuroticism association with the flourishing scale; that is, those with high Neuroticism reported less well-being, in part, because they tended to report less vivid Turning Point and less coherent Childhood Memory (see Table 7). By contrast, participants high in Conscientiousness rated their Turning Point (but not Childhood Memory) as more vivid and emotionally intense, which were in turn qualities related to positive functioning. A less clear pattern of mediation, however, emerged when considering life satisfaction as outcome: Coherence (of Turning Point Memory) and Distancing (of Childhood Memory) mediated life satisfaction association with Neuroticism, while Emotional Intensity mediated life satisfaction association with Conscientiousness (for Childhood Memory only).

As noted before, phenomenology did not completely mediate the association between personality and positive functioning and life satisfaction; neuroticism and conscientiousness still had significant direct effects in predicting well-being. Mediation effects were modest in magnitude ($\Delta\beta$ ranged from .03 to .06 for Turning Point and from .00 to .03 for Childhood Memory).

Table 6 – Mediation of the Effect of Personality on well-being variables through Memory Affect and Phenomenology

	Positive Functioning				Life Satisfaction			
	Turning Point		Childhood Memory		Turning Point		Childhood Memory	
Variable	B(SE)	BC 95% CI	B(SE)	BC 95% CI	B(SE)	BC 95% CI	B(SE)	BC 95% CI
Neuroticism								
Positive Affect	-.033(.008)*	-.050 -.019	-.011(.005)*	-.023 -.003	-.046(.013)*	-.073 -.023	-.021(.009)*	-.045 -.009
Negative Affect	-.002(.007)	-.017 .011	-.005(.004)	-.014 .003	.009 (.012)	-.013 .033	.012(.007)*	.000 .030
Vividness	-.018(.006)*	-.033 -.008	-.003(.004)	-.013 .004	-.011(.008)	-.030 .003	-.001(.007)	-.016 .013
Coherence	-.001(.004)	-.010 .007	-.010(.005)*	-.022 -.003	.014(.008)*	.001 .033	.004(.007)	-.009 .020
Emotional Intensity	-.000(.003)	-.007 .006	.000(.002)	-.005 .006	-.000(.002)	-.007 .003	-.000(.003)	-.008 .004
Distancing	.004(.003)*	.000 .013	.005(.003)*	.001 .013	-.007(.005)	-.020 .001	-.007(.005)*	-.020 -.000
Total	-.050(.011)*	-.074 -.029	-.025(.008)*	-.041 -.010	-.040(.018)*	-.077 -.007	-.014(.012)	-.040 .008
Conscientiousness								
Positive Affect	.036(.009)*	.020 .057	.011(.014)*	.002 .026	.054(.015)*	.028 .088	.021(.011)*	.003 .047
Negative Affect	.002(.007)	-.010 .017	.001(.006)	-.008 .011	.000(.012)	-.024 .024	-.016(.010)*	-.042 -.000
Vividness	.030(.012)*	.007 .055	-.002(.005)	-.024 .020	.021(.022)	-.022 .065	-.005(.022)	-.048 .038
Coherence	-.001(.010)	-.021 .019	.019(.011)	-.003 .044	-.027(.017)	-.063 .006	-.017(.020)	-.059 .020
Emotional Intensity	.011(.006)*	.001 .026	.002(.012)	-.008 .013	.003(.010)	-.017 .025	-.022(.011)*	-.049 -.005
Distancing	-.004(.003)	-.013 .000	-.000(.005)	-.006 .001	.007(.006)	-.001 .022	-.003(.006)	-.007 .018
Total	.075(.016)*	.045 .109	.031(.001)*	.004 .060	.058(.028)*	.004 .113	-.035(.027)	-.090 .016

Note. N = 970 for Turning Point and N = 930 for Childhood Memory. Demographic factors (i.e. age, age squared, sex, race/ethnicity) are included as covariates in the model. B = non-standardized coefficient; SE = standard error of B; BC = bias corrected; CI = confidence interval; 5,000 bootstrap samples.

*p <.05.

Table 7 – Coefficients for the Mediation of the Effect of Personality on well-being variables through Memory Affect and Phenomenology

	Turning Point						Childhood Memory					
	Memory (Path a)		Positive Functioning (Path b)		Life Satisfaction (Path b)		Memory (Path a)		Positive Functioning (Path b)		Life Satisfaction (Path b)	
Variable	B(SE)	*β*	B(SE)	*β*	B(SE)	*β*	B(SE)	β	B(SE)	β	B(SE)	β
Neuroticism												
Positive Affect	- .401(.053)	- .244**	.083(.015)	.166**	.114(.027)	.138**	- .246(.054)	- .153**	.045(.016)	.088**	.092(.029)	.108**
Negative Affect	.320(.041)	.252**	- .006(.020)	- .009	.031(.035)	.029	.194(.044)	- .148**	- .025(.020)	- .041	.069(.035)	.065*
Vividness	- .156(.032)	- .157**	.113(.027)	.136**	.070(.048)	.051	- .135(.038)	- .120**	.024(.026)	.033	.009(.045)	.007
Coherence	- .159 (.034)	- .154**	.009(.024)	.011	- .085(.043)	- .064*	- .130(.034)	- .127**	.082(.027)	.102**	- .033(.047)	- .025
Emotional Intensity	.001(.038)	.001	.081(.021)	.113**	.049(.038)	.041	.008(.043)	.006	.048(.021)	.074*	- .043(.036)	- .039
Distancing	.140 (.049)	.096**	.029(.016)	.051+	- .041(.028)	- .044	.120(.045)	.089**	.037(.018)	.061*	- .057(.031)	- .055+
	Path c		-.439(.024)	- .531**	-.680(.040)	- .499**	Path c		-.447 (.024)	.543**	-.712 (.041)	.518**
	Direct Effect		-.389(.024)	- .470**	-.640(.042)	- .470**	Direct Effect		-.422 (.024)	.513**	-.698 (.041)	.508**
Conscientiousness												
Positive Affect	.332(.072)	.154**	.107(.015)	.214**	.158(.028)	.192**	.173(.072)	.082*	.069(.017)	.135**	.133(.031)	.156**
Negative Affect	- .308(.054)	- .185**	- .007(.020)	- .010	- .001(.038)	- .001	- .199(.059)	- .115**	-.007(.020)	- .012	.079(.038)	.076*
Vividness	.396(.041)	.303**	.074(.028)	.089**	.050(.053)	.037	.409(.049)	.273**	-.005(.027)	- .007	- .012(.049)	-.010
Coherence	.367(.044)	.269**	- .003(.025)	- .004	- .073(.046)	- .056	.360(.044)	.267**	.052(.028)	.065+	- .047(.051)	-.035
Emotional Intensity	.240(.050)	.158**	.047(.022)	.066*	.012(.041)	.010	.228(.056)	.138**	.008(.021)	.013	- .096(.039)	-.088*
Distancing	- .135(.064)	- .070*	.026(.016)	.046	- .044(.030)	- .047	- .039(.060)	- .022	.012(.018)	.019	- .090(.033)	-.088**
	Path c		.572 (.031)	.526**	.566 (.058)	.316**	Path c		.581(.032)	.536**	.598 (.059)	.329**
	Direct Effect		.496(.032)	.457**	.506(.061)	.284**	Direct Effect		.550(.033)	.507**	.632 (.062)	.348**

Note. B = non-standardized coefficient; SE = standard error of B; *β* = standardized coefficient.
+ p<.10. *p<.05. **p<.01.

Discussion

The primary aim of the study was to explore age differences in autobiographical memory, considering the full-range of phenomenological memory experiences. A large, stratified sample of adults aged 20-90 years retrieved two 'key' autobiographical episodes, a Turning Point and a Childhood Memory, and rated them using PANAS and MEQ scales. Although older adults reported more phenomenological intense (i.e., more vivid, coherent, temporally clear, etc.) memories compared to younger adults, they also seemed to less easily access detailed and rich information in later ages. The secondary aim of the study was to test whether phenomenology mediated personality (Neuroticism and Conscientiousness) associations with positive/negative outcome variables. Participants completed measures of depression, positive functioning and life satisfaction, which have been consistently related to Neuroticism and Conscientiousness (Friedman & Kern, 2014). For those participants high in Neuroticism and low in Conscientiousness, dimensions such as Coherence appeared critical in predicting level of depressive symptoms. Conversely, others dimensions (e.g. Distancing) appeared implicated in overall well-being.

As observed in previous studies (e.g., Janssen et al., 2011; Kingo et al., 2013), phenomenology linearly increased through adult lifespan; however, a quadratic trend was also observed for Accessibility and Emotional Intensity (for both memories), Sensory Details (Turning Point Memory only) and Coherence (Childhood Memory only) scales. Although previous studies suggested episodic deficits in the elderly (Piolino et al., 2010; Piolino et al., 2006), older adults seem to preserve some well-rehearsed and phenomenologically-rich memories. Age findings seemed to reflect the progressive integration of memories into participants' life stories. Coherence ratings, for example, tended to increase cross-sectionally

between early and middle adulthood, and remained roughly stable in later ages. Still, with age, participants tended to distance less from their turning point events. Other studies have indeed found an increase in narrative coherence (integration) from adolescence up to middle adulthood (e.g., Habermas & de Silveira, 2008; Habermas et al., 2013). Younger participants may need time to comprehend the importance of past experiences (Linton, 1986), to relate and to integrate them with other parts of the life story (McAdams & Olson, 2010). Early adulthood, in particular, is a time of tremendous consolidation of both autobiographical memories and self and identity (Montebarocci et al., 2014). Though small in size (highest β = .18 for Coherence), the effect of age was larger than the effect of other factors known to affect phenomenology, i.e. the recency of the memory itself.

The present findings confirmed the importance of Coherence dimension. An indirect effect of Coherence linked personality and depression. Individuals high in Neuroticism (or low in Conscientiousness) may have more incoherent memories, and this incoherence may create vulnerability to depression. Incoherence has been previously found as a critical mediator of individual attachment style and psychological distress (Sutin & Gillath, 2009): Although the retrieval of vague memories may reduce the immediate impact of an event in individuals with avoidant style, it may also hinder the beneficial functions that memories serve, leading to greater psychological distress over time. McAdams (2006b) maintained that a coherent life story contributes to psychological health: Individuals who are able to meaningfully connect their past experiences can use those experiences to understand themselves, or tell others about them. All aspects that likely protect from psychological distress in general (Sutin & Gillath, 2009). It worth to note that, here, Coherence refers to the participant's subjective experience of the event in the memory as a logical story (Sutin & Robins, 2007). It is possible that raters' judgments of

narrative coherence would not correspond to the individuals' phenomenological experience of memory coherence. Nevertheless, the latter is equally important as the former.

Other phenomenological dimensions appeared to mediate the personality link with overall well being. For example, individuals high in Neuroticism had lower levels of well-being in part because they tended to distance themselves more from their past. They may not integrate their life-changing experiences in the context of their lives. Conversely, in response to their need for coherence, individual high in Conscientiousness tended to report more phenomenologically intense and affectively positive memories, enhancing their sense of well-being and satisfaction. Autobiographical memories are here proposed as dynamic expressions of personality functioning that partially contribute to adaptive/maladaptive psychological outcomes. However, the nature of the study is primarily correlational and causal links cannot be inferred. The association between memory, personality and outcome variables should be tested both concurrently and longitudinally (Study 2 constitutes an attempt).

The present research has several limitations and opportunities for further research. First, two memories were sampled in the present research. Other 'key' memories (e.g. low point, high point, etc.) in addition to Turning Point and Childhood Memory should be also considered in future studies. Second, participants completed an on-line survey. Though the use of on-line questionnaires is becoming common practice in the field, it is possible that participants could have been distracted while completing the measures or have not followed properly the instructions. For this reason, we created a series of 'flag variables' to check the validity of the data collected. Findings held after excluding invalid cases (i.e. *speeders*). Third, alpha reliabilities of the Coherence, Accessibility, and Sensory Details scales of the MEQ were poor for both memory types. Although they were retained because they correlated in hypothesized

ways with the variables of interest (see Footnote 6 for details), replication is needed to strength the findings concerning these dimensions. Finally, all of the measures were self-report. The focus of the study was on how the individual understands his or her experiences, and on how this potential determines adaptive/maladaptive outcomes. However, it would be informative to code the qualities of the memory from the narrative and see whether there is congruence between subjective and objective ratings of the memory.

Despite the limitations, the present work increases our understanding of the interrelation between autobiographical memory, personality and positive/negative psychological outcomes (e.g. depression). A deeper understanding is of fundamental importance for both theoretical and applied reasons. For one, the relationship of personality with the experience of autobiographical memory may shed light on how individuals construe life story memories, and how the story they tell promotes social-emotional adjustment, psychological growth and wisdom (Blagov & Singer, 2004). It can also help to understand the role of memory phenomenology when designing interventions targeted at reducing psychological distress (or increasing overall well-being). For example, on the basis of preliminary evidences (Reas, Williams, & Hermans, 2009), Dalgleish et al. (2014) have planned a clinical trial on the efficacy of a Memory Specificity Training (MEST) that aims to reduce depressive symptoms by targeting depression-related memory disturbances. There is also increasing evidence of the efficacy of Life Review interventions in alleviating depression symptoms and enhancing life satisfaction in the elderly (Latorre et al., 2015; Serrano, Latorre, Gatz, & Montanes, 2004). In fact, as maintained by Singer and colleagues (Singer et al., 2013; Singer & Bonalume, 2010; Singer & Conway, 2011), personal memories and life stories represent daily material to work on during clinical interactions.

Study 2: Continuity of Autobiographical Memory over time

Memories for meaningful life events tend to preserve intense phenomenological qualities over time. An individual may consistently rate one particular memory as extremely vivid and emotionally intense either because of the visual clarity and emotional charge of that particular memory or because all of his/her memories tend to be vivid and emotionally intense. As shown by Rubin and colleagues (2004), beyond memory-specific characteristics, what is stable is the cognitive (retrieval) style of the individual. Indeed, as summarized earlier, phenomenological qualities have been linked to underlining stable dispositions—i.e. personality (Rubin & Siegler, 2004; Singer & Salovey, 1993), as well as to a variety of positive/negative psychological outcomes—well-being and life satisfaction (Philippe, Koestner, Beaulieu-Pelletier, & Lecours 2011; Sutin, 2008), depression and anxiety (Sumner, 2012; Witheridge, Cabral, & Rector, 2010). To date, however, relatively few studies have assessed autobiographical memory longitudinally. And, the majority of the existing work has focused on the accuracy or the consistency of memory content, rather than on the continuity of the subjective experience of affect and phenomenology (though see Rubin et al., 2004; Thomsen et al., 2012).

Applying a longitudinal design, the present research explored the affect and phenomenology of two particular autobiographical memories—a Turning Point Memory and a Childhood Memory—in a sample of Italian adults aged 20-40 years, over a 4-week period. The research aimed to address the following questions:

- *Is memory affect and phenomenology stable across memories and over time?*

  Specifically, continuity and change in memory affect and phenomenology were assessed by examining (a) correlation coefficients and (b) mean-level differences. Correlations were used to determine the relative stability in memory ratings: Whether an individual

tends to score high (or low) on a particular dimension across memory and over time. Based on previous studies (Rubin et al., 2004; Sutin & Robins, 2005), test-retest coefficients around .40 to .60 were expected. Additionally, mean differences were used to detect variation: Whether the average amount of a particular dimension varies across memories and sections. In this case, non-significant changes in memory ratings were expected at follow-up (Thomsen et al., 2012).

- *Is memory affect, phenomenology, and changes in phenomenology related to personality?*

  As linked to important cognitive–affective processes, Neuroticism and Conscientiousness were expected to affect self-reported memory ratings. Despite some modest inconsistencies in literature, individuals high in Neuroticism—who are inclined to experience a wide range of negative emotions—were expected to report more emotionally intense and negative memories, whereas individual high in Conscientiousness—who are inclined to be organized and disciplined—were expected to report more vivid and coherent memories (see Rubin et al., 2008; Sutin, 2008; Thomsen et al., 2014). For the first time, these traits were also investigated in relation with changes in memory affect and phenomenology.

- *Is memory phenomenology and change in phenomenology related to clinically relevant outcome variables?*

  Specific memory qualities were expected to relate to the negative/positive psychological outcomes of interest: depression, overall well-being and life satisfaction. In particular, individual with higher depressed affect are expected to show impoverished memories (e.g., Sumner, 2012; Bergouignan et al., 2008)—e.g., incoherent and affectively negative memories, retrieved them from a 3rd person visual perspective. On the other end,

individual high in well-being are expected to have memories with more rich and intense phenomenological qualities. Changes in phenomenology were also investigated in relation with changes in positive/negative outcomes over time.

- *Does phenomenology mediate the effect of personality on outcome variables?*

  Finally, the present study aimed to longitudinally test phenomenology and changes in phenomenology as potential mediators of the association between personality and depression, overall well-being and life satisfaction. Indeed, autobiographical memory can be considered as a dynamic expression of personality functioning that may partially explain adaptive/maladaptive psychological outcomes. This is an interesting avenue in the study of memory and personality (see Sutin, 2008), though additional studies are needed.

Method

Participants and procedure

The current study utilized an on-line survey created with Qualtrics software and distributed by electronic mail to a community sample from Italy. Participants provided informed consent in person at the time of recruitment. They were asked to complete the same survey as Study 1—i.e. Memory Task (Block 1) and Questionnaires (Block 2)—on two different occasions separated in time (see Figure 1 for details). Once the first survey was completed (Time 1), a second link was sent again to each respondent after 4 weeks (Time 2). The order of memory recall, and the order of survey blocks, was counterbalanced across participants[9]. On average, it

[9] Forty-three percent of the sample completed the Memory Task (Block 1) first and 57% of the sample completed the Questionnaires (Block2) first. Half of the participants recalled the Turning Point Memory first, while the other half recalled the Childhood Memory first. Independent *t*-tests were performed to test order effects on the memory measures; only 7 of 56 tests were significant.

took 40 minutes to complete the survey. The 4 week interval was considered long enough because participants would not be able to remember the first set of ratings.

A total of 104 participants responded to at least part of the survey at Time 1; 69.2% (N = 72) responded at Time 2. The time (days) between the two sessions varied across participants (M = 39.4, SD = 13.1). Of note, given the amount of partial responses per session, only part of the sample had valid memory data at both time points. Specifically, 99 participants answered at least one of the memory requests at Time 1, and 64 answered at least one memory at Time 2. A total of 61 and 58 participants had respectively valid Turning Point and Childhood Memory at both sessions. Descriptive statistics are presented in Table 1 (Supplementary Material of Study 2 is presented in Appendix C).

Memory task

The memory requests used in Study 1—i.e. Turning Point and Childhood Memory requests—were translated into Italian using the standard translation/back-translation method. Participants were asked to rate memories on the same affect and phenomenological dimensions, completing the abbreviated version of PANAS and the short form of MEQ at both the Time 1 and Time 2 sessions; instructions at Time 2 were identical to those used at Time 1. Even though participants were not told whether or not to write about the same experience, the use of McAdams's (2008) 'key event' requests would have assured the retrieval of the same memories across sessions. Memories of Time 2 were coded as either the same or different from the memories of Time 1. A memory was considered the same if the core event described was the same (e.g., first day of school). A second judge independently coded whether the event was the same or not for a subset (20%) of the memories; high agreement with the first judge was observed (kappa ≥.90 for both memory types).

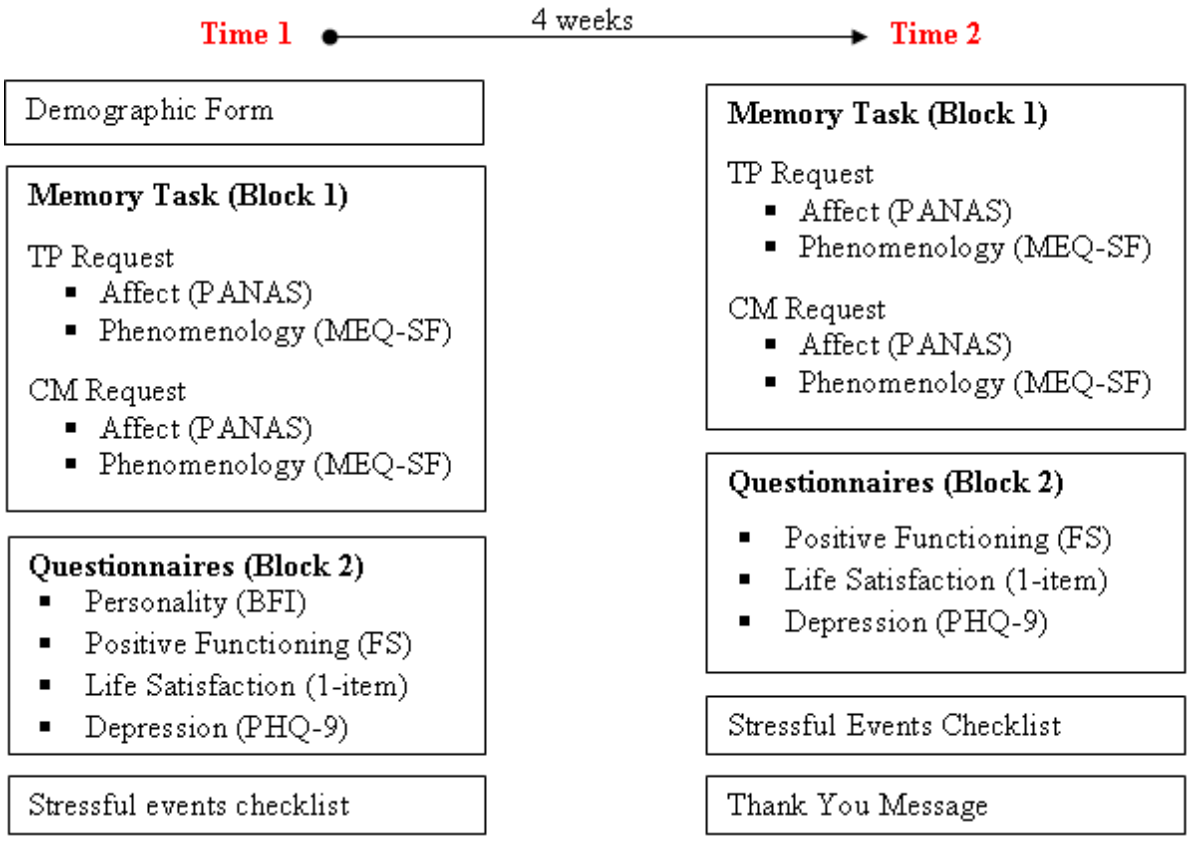


Figure 1: Study Design. Note that the order of memory recall, and the order of survey blocks, was counterbalanced across participants. TP = Turning Point; CM = Childhood Memory; PANAS = Positive and Negative Affect Schedule; MEQ-SF = Memory Experiences Questionnaire – Short Form; BFI = Big Five Inventory; FS = Flourishing Scale; PHQ-9 = Patient Health Questionnaire-9.

In the present sample, the PANAS and MEQ scales showed acceptable-to-good reliability at both Time 1 and Time 2 (see Table 1). Specifically, for both memory types, alphas for the PA and NA scales were over .80 at both time points. For the Turning Point Memory, the median alpha across MEQ scales was .73 at Time 1 and .75 at Time 2; with the exception of Accessibility, Sensory Details, and Time Perspective, alphas ranged from .67 (Vividness) to .94 (Valence) at Time 1, and from .64 (Coherence) to .90 (Sharing, Distancing, Valence) at Time 2.

For the Childhood Memory, the median alpha across MEQ scales was .77 at Time 1 and .81 at Time 2; with the exception of Sensory Details, alphas were above .70 at both time points[10].

Other self-reported measures

At both time points, participants completed the Italian version of the Patient Health Questionnaire depression module (PHQ-9; Mazzotti et al., 2003; Spitzer et al., 1999) and the Flourishing Scale (FS; Dienier et al., 2009), along with the single-item measure of life satisfaction (i.e. "I am satisfied with my life"). In the present sample, Cronbach's alphas were ≥ .80 (see Table 1). Personality (i.e. Neuroticism and Conscientiousness) was assessed with the Big Five Inventory (BFI; Fossati, Borroni, Marchione, & Maffei, 2011; John & Srivastava, 1999) at Time 1. Neuroticism had an alpha of .78 and Conscientiousness had an alpha of .83.

At the end of each session, participants completed a multiple-choice checklist to indicate any potential stressful events (i.e. natural disaster, accident, life-threatening illness or injury, etc.) that occurred within the last month. A yes/no variable was subsequently created to indicate the presence/absence of any of the listed events.

[10] The alpha reliabilities of MEQ scales were, in general, lower for Turning Point Memory than for Childhood Memory. The alpha of the Sensory Details scale was <.60 for Turning Point Memory and ~.60 for Childhood Memory. Indeed, this scale includes items that cover different aspects of the measured construct, and the item heterogeneity could affect internal consistency: Items assess the presence of sounds, smells, tastes in the memory, as well as the reliving sensations associated with the memory. For Turning Point Memory but not for Childhood Memory, two other MEQ scales showed alphas below or equal to .60, i.e. Accessibility and Time Perspective. Despite that, these scales were retained in the present study. First, in most of the cases, they correlated with personality, depression and well-being variables in predictable way. For example, Accessibility of the Turning Point Memory was associated with low Neuroticism and high Conscientiousness at both time points. Second, as suggested by McCrae and colleagues (McCrae, 2014; McCrae et al., 2011) other criteria besides alphas should be considered to quantify the validity of self-report scales, especially test-retest reliability (see McCrae, 2014; McCrae et al., 2011 for further details). Nevertheless, as noted below (see Discussion section), caudation is needed in interpreting the results of the named scales.

Table 1 – Descriptive statistics

	Time 1			Time 2		
	M (SD)[a]		α	M (SD)		α
Age (years)	28.7	(3.9)		28.6	(3.7)	
Education (years)	17.7	(2.9)		18.2	(2.9)	
Males, count (%)	39 (37.5)			25 (35.7)		
Single/never married, count (%)	80 (76.9)			-		
Workers, count (%)	54 (51.9)			-		
Turning Point Memory						
Positive Affect	2.98	(1.2)	.88	2.78	(1.1)	.88
Negative Affect	1.70	(0.8)	.82	1.60	(0.8)	.84
1. Vividness	4.16	(0.8)	.67	3.91	(0.9)	.82
2. Coherence	4.18	(0.9)	.72	3.78	(0.9)	.64
3. Accessibility	4.40	(0.6)	.21	4.22	(0.9)	.61
4. Sensory Details	3.55	(0.8)	.50	3.28	(0.7)	.29
5. Emotional Intensity	4.21	(0.9)	.74	3.95	(0.8)	.67
6. Visual Perspective	3.83	(1.1)	.83	3.98	(1.0)	.87
7. Time Perspective	3.95	(0.9)	.56	3.52	(0.9)	.64
8. Sharing	2.88	(1.3)	.87	2.90	(1.2)	.90
9. Distancing	3.19	(1.2)	.89	3.37	(1.2)	.90
10. Valence	3.57	(1.5)	.94	3.70	(1.4)	.90
Age at the event	20.5	(5.7)		20.5	(5.2)	
Childhood Memory						
Positive Affect	2.53	(1.1)	.85	2.32	(1.1)	.87
Negative Affect	1.62	(0.9)	.85	1.40	(0.6)	.80
1. Vividness	3.32	(1.0)	.81	3.22	(1.1)	.81
2. Coherence	3.74	(1.0)	.73	3.69	(1.0)	.71
3. Accessibility	3.85	(1.0)	.74	3.78	(1.0)	.80
4. Sensory Details	3.12	(0.9)	.60	3.05	(0.8)	.64
5. Emotional Intensity	3.73	(1.0)	.76	3.37	(1.0)	.81
6. Visual Perspective	3.46	(1.1)	.77	3.55	(1.1)	.90
7. Time Perspective	2.72	(1.2)	.77	2.73	(1.2)	.74
8. Sharing	2.30	(1.1)	.86	2.07	(1.1)	.87
9. Distancing	3.03	(1.2)	.86	2.99	(1.2)	.86
10. Valence	3.79	(1.4)	.90	3.73	(1.4)	.93
Age at the event	5.70	(2.4)		6.19	(2.9)	
Neuroticism	3.20	(0.7)	.78	-		
Conscientiousness	3.76	(0.7)	.83	-		
Depression	6.27	(4.7)	.84	5.39	(3.7)	.80
Positive Functioning	3.92	(0.6)	.80	4.08	(0.6)	.84
Life Satisfaction (1-item)	3.59	(1.1)		3.83	(1.0)	
Yes/No stressful event, count (%)	21 (20.2)			5 (4.8)		
Total N	104			72		

Note. N = 99 completed the Memory Task (Block 1) at Time 1 and N = 64 at Time 2. N = 103 completed the Questionnaires (Block 2) at Time 1 and N = 72 at Time 2. Of note, 50.8% and 69.0% of participants reported, respectively, a different Turning Point and Childhood Memory at Time 2.

[a] Mean and standard deviations are reported unless otherwise specified.

Results

The results are divided into three main sections that examine: (1) continuity of affect and phenomenology across memories and (2) over time, and (3) correlates of phenomenological qualities and change in phenomenology. After exploring mean-level differences, continuity was assessed by using correlations. To extend the cross-sectional findings of Study 1, phenomenology was tested as a potential mediator of the longitudinal association between personality and the psychological outcomes (i.e. depression, positive functioning and life satisfaction).

(1) Continuity of affect and phenomenology across memories

First, sample-level differences between the Turning Point Memory and the Childhood Memory were examined. A repeated measure Analysis of Variance (ANOVA) was performed on memory ratings with Memory Type (Turning Point vs. Childhood Memory) as the within-subject factor. Participants tended to report more Positive Affect (but not Negative Affect) in the Turning Point Memory than in the Childhood Memory [$F(1, 93) = 12.10$, $p = .001$, ${}_{\text{partial}}\eta^2 = .11$]. They also tended to rate the Turning Point Memory as more vivid [$F(1, 93) = 61.05$, $p < .001$, ${}_{\text{partial}}\eta^2 = .40$], coherent [$F(1, 93) = 10.96$, $p = .001$, ${}_{\text{partial}}\eta^2 = .10$], accessible [$F(1, 93) = 20.07$, $p < .001$, ${}_{\text{partial}}\eta^2 = .18$], emotionally intense [$F(1, 93) = 20.65$, $p \leq .001$, ${}_{\text{partial}}\eta^2 = .18$], as having more sensory details [$F(1, 93) = 17.24$, $p \leq .001$, ${}_{\text{partial}}\eta^2 = .16$] and a clearer time perspective [$F(1, 93) = 79.92$, $p \leq .001$, ${}_{\text{partial}}\eta^2 = .46$], and as being more likely shared with others [$F(1, 93) = 15.56$, $p \leq .001$, ${}_{\text{partial}}\eta^2 = .14$] and retrieved from a first-person visual perspective [$F(1, 93) = 6.86$, $p = .010$, ${}_{\text{partial}}\eta^2 = .07$]. The Turning Point Memory was more likely to be important and central to participants' current self than early memories. They were also more recent and, therefore, it is not surprising that they had higher memory ratings compared to remote memories.

Second, to test continuity of memory affect and phenomenology, each of the PANAS and MEQ scales were correlated with its respective scale across the two memories (see Table 2 below). Although generally positive, the correlations were modest in size. Positive Affect (but not Negative Affect) reported in Turning Point was significantly correlated with Positive Affect reported in Childhood Memory (r = .23, p < .05). Phenomenology dimensions such as Vividness (r = .32, p < .01) and Emotional Intensity (r = .47, p < .01) were the most consistent across memories, followed by Sensory Details (r = .23, p < .05) and Distancing (r = .27, p < .01). This pattern suggests that dimensions like Vividness or Emotional Intensity were less memory-specific—i.e. participants with highly vivid and emotional memories may retrieved any given memory as visually clear and emotionally charged, regardless of the recency or the type of the retrieved event. The consistency of affect (median correlation = .14) was roughly similar to the consistency of phenomenology (median correlation = .13).

(2) Continuity of affect and phenomenology over time

Of note, it was common for participants to report a different experience at Time 2 than at Time 1: 50.8% of the sample wrote about a different Turning Point and 69.0% wrote about a different Childhood Memory. As such, mean differences between Time 1 and Time 2 were tested taking into account whether or not participants wrote about a different experience. A 2 (Time: T1 vs. T2) × 2 (Coding: Same vs. Different Memory) repeated measures Analysis of Variance (ANOVA) was performed on memory ratings[11]. For the Turning Point Memory, a significant effect of Time was found for Vividness [$F(1, 58) = 4.05$, $p = .049$, $_{\text{partial}}\eta^2 = .06$], Coherence [$F(1, 58) = 8.01$, $p = .006$, $_{\text{partial}}\eta^2 = .12$], Sensory Details [$F(1, 58) = 5.41$, $p = .024$,

[11] Only part of the sample reported to had experienced stressful events in the month immediately before the beginning of the study (20.2%), or during the time interval (4.8%). When examining the presence of stress as between-subject factor, no main effect of stress or interactive effect of stress with time were found on memory ratings.

$_{partial}\eta^2$ = .08], and Time Perspective [F(1, 58) = 10.21, p = .002, $_{partial}\eta^2$ = .15]; that is, participants showed a slight decrease in the ratings of these scales over time (see Figure 2, section a). A significant time × coding interaction was also found for Accessibility [F(1, 58) = 4.10, p = .047, $_{partial}\eta^2$ = .07] and Emotional Intensity [F(1, 58) = 6.07, p = .017, $_{partial}\eta^2$ = .09]: When a different Turning Point was retrieved at Time 2, participants rated their second memory as less accessible and less emotionally intense. For the Childhood Memory, a significant effect of Time was found for Emotional Intensity [F(1, 55) = 4.81, p = .033, $_{partial}\eta^2$ = .08]; participants showed a slight decrease in the ratings of this scale over time (see Figure 2, section b). A significant effect of coding was found for Time Perspective [F(1, 55) = 7.61, p = .008, $_{partial}\eta^2$ = .12]; that is, those who wrote about the same events had a clearer time perspective. A significant time × coding interaction was also found for Distancing [F(1, 55) = 10.15, p = .002, $_{partial}\eta^2$ = .16]; in this case, though lower at Time 1, Distancing ratings tended to increase for those who reported the same Childhood Memory at Time 2.

Table 3 shows correlations of affect and phenomenology for each memory over time. The test-retest correlations for PANAS and MEQ scales were moderately strong and generally significant (median correlation = .39 for Turning Point and = .40 for Childhood Memory), especially for those who wrote about the same experience. Even if the content changed, memory affect and phenomenology remained fairly stable over time. Affect was generally more stable than phenomenology. Of the 10 phenomenology dimensions, Emotional Intensity, Sharing and Valence were the most stable over time (rs ≥ 40 for both memory types), followed by Vividness, Time Perspective and Distancing (rs ≥ 30 for Turning Point and ≥ 50 for Childhood Memory).

Table 2 – Correlations between memory, personality, and outcome variables for the all sample $N = 104$

	PA		NA		1		2		3		4		5		6		7		8		9		10		Age at event	
type of memory:	TP	CM	TP	CM	TP	CM	TP	CM	TP	CM	TP	CM	TP	CM	TP	CM	TP	CM	TP	CM	TP	CM	TP	CM	TP	CM
Neuroticism (BFI)	-.22*	-.06	.23*	-.02	.04	-.17	.25*	-.16	-.10	-.20+	.09	-.08	.16	.19+	-.01	-.27**	.11	-.19+	-.29**	-.06	.11	.01	-.25*	-.14	-.07	-.10
Conscientiousness (BFI)	.36**	.14	-.34**	.10	.22*	.30**	.00	.21*	.11	.08	.13	.28**	-.11	.14	.05	.18+	.15	.19+	.36**	.12	-.01	-.11	.32**	-.01	.11	.04
Depression (PHQ-9)	-.38**	-.09	.36**	-.04	-.07	-.18+	.15	-.16	-.10	-.12	-.04	-.06	-.03	-.17	-.26**	-.15	-.18+	-.13	-.49**	-.15	.06	-.01	-.34**	-.14	-.21*	-.14
Positive Functioning (FS)	.39**	-.01	-.36**	-.07	-.01	.08	-.09	.12	.23*	.19+	.08	.09	-.02	-.01	.03	.07	-.07	.02	.32**	.19+	.02	-.07	.40**	.09	.12	-.04
Life Satisfaction (1-item)	.40**	.05	-.41**	-.07	.05	.08	-.09	.03	.20*	.14	.03	-.02	-.09	.04	.13	.10	.12	.07	.34**	.18+	-.05	-.01	.47**	.18+	.13	.04
Positive Affect (PA)	1	1	-.42**	-.28**	.17+	.39**	.03	-.03	.33**	.25*	.33**	.24*	.22*	.21*	.14	.12	.01	.24*	.42**	.26*	-.27**	-.19+	.73**	.59**	.27**	-.13
Negative Affect (NA)			1	1	.00	.14	-.02	.26*	-.20*	-.08	-.02	.30**	.22*	.29**	-.03	-.06	-.03	-.00	-.26**	-.29**	.11	.10	-.64**	-.59**	-.16	.05
1. Vividness					1	1	.51**	.62**	.39**	.45**	.51**	.59**	.37**	.32**	.25*	.29**	.55**	.61**	.35**	.19+	-.20+	-.29**	.06	.21*	.20*	-.09
2. Coherence							1	1	.31**	.34**	.26**	.54**	.23*	.20+	.02	.37**	.40**	.45**	-.08	-.06	-.24*	-.27**	-.03	-.11	.22*	.03
3. Accessibility									1	1	.21*	.31**	.11	.17	-.02	.25*	.13	.17	.24*	.22*	-.16	-.12	.35**	.31**	.21*	-.18+
4. Sensory Details											1	1	.36**	.34**	.12	.14	.37**	.33**	.18+	-.01	-.20*	-.20*	.09	.05	.27**	-.08
5. Emotional Intensity													1	1	.19+	-.11	.25*	.05	.02	-.14	-.05	-.02	-.08	.01	.05	-.08
6. Visual Perspective															1	1	.17+	.33**	.25*	.16	-.09	-.24*	.07	.11	.14	.01
7. Time Perspective																	1	1	.03	.12	-.02	-.15	-.06	.23*	.18	-.01
8. Sharing																			1	1	-.08	-.16	.39**	.33**	.28**	-.18+
9. Distancing																					1	1	-.18+	-.04	-.20*	.04
10. Valence																							1	1	.16	-.02
*r*s between memories	.23*		.06		.32**		.05		-.07		.23*		.47**		.14		.13		.10		.27**		.05			

Note. $N = 99$ had Turning Point Memory and $N = 94$ had Childhood Memory at Time1. Correlations of each of the scales with its respective scale across the two memories are reported at the bottom line of the table. The median intercorrelation among MEQ scales was .19 within Turning Point Memory (*r*s ranged from -.24 to .55) and .21 within Childhood Memory (*r*s ranged from -.29 to .62).

$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$.

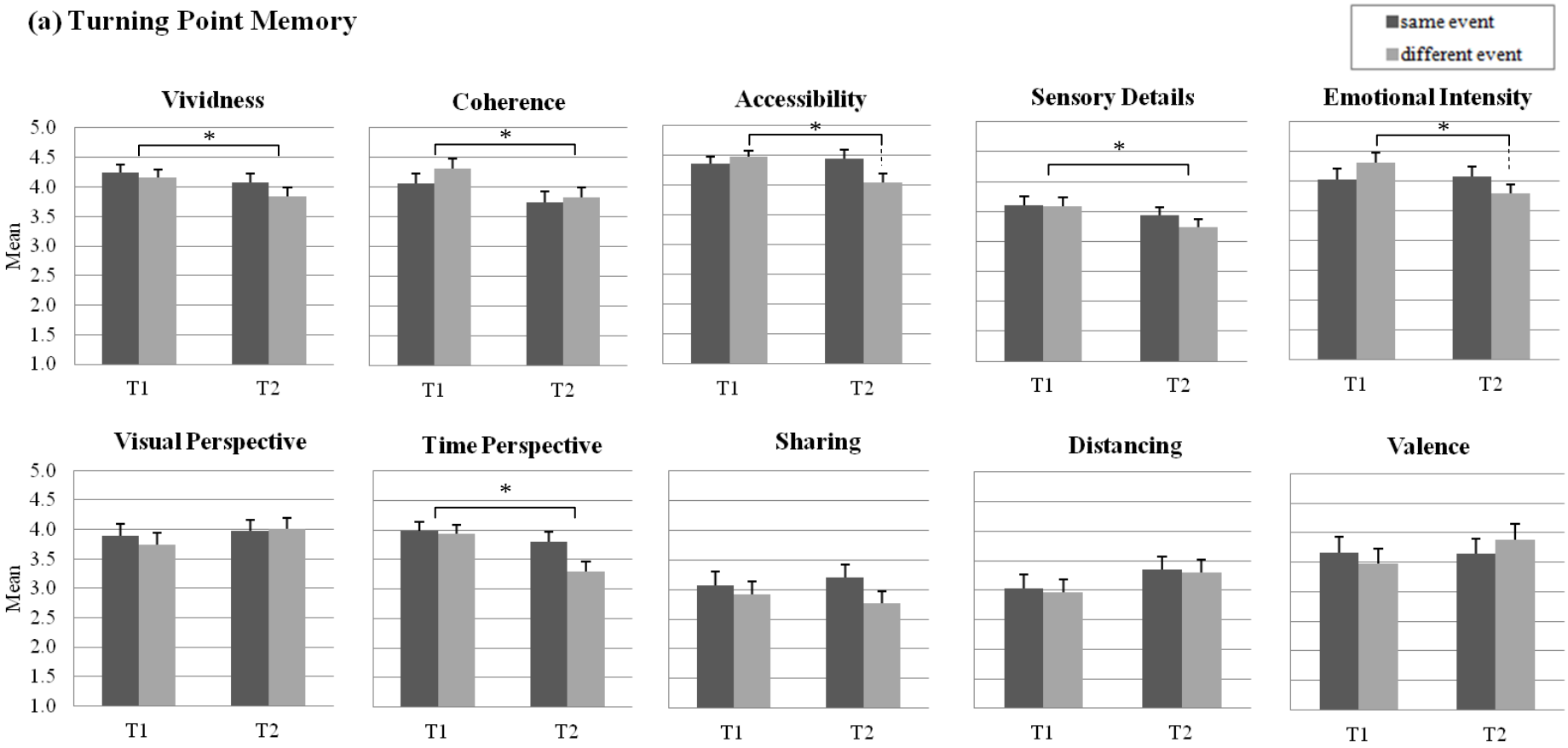


Figure 2 - Section (a): Estimates marginal means of MEQ scales at Time1 (T1) and Time2 (T2) for Turning Point Memory. Error bars represent standard errors.

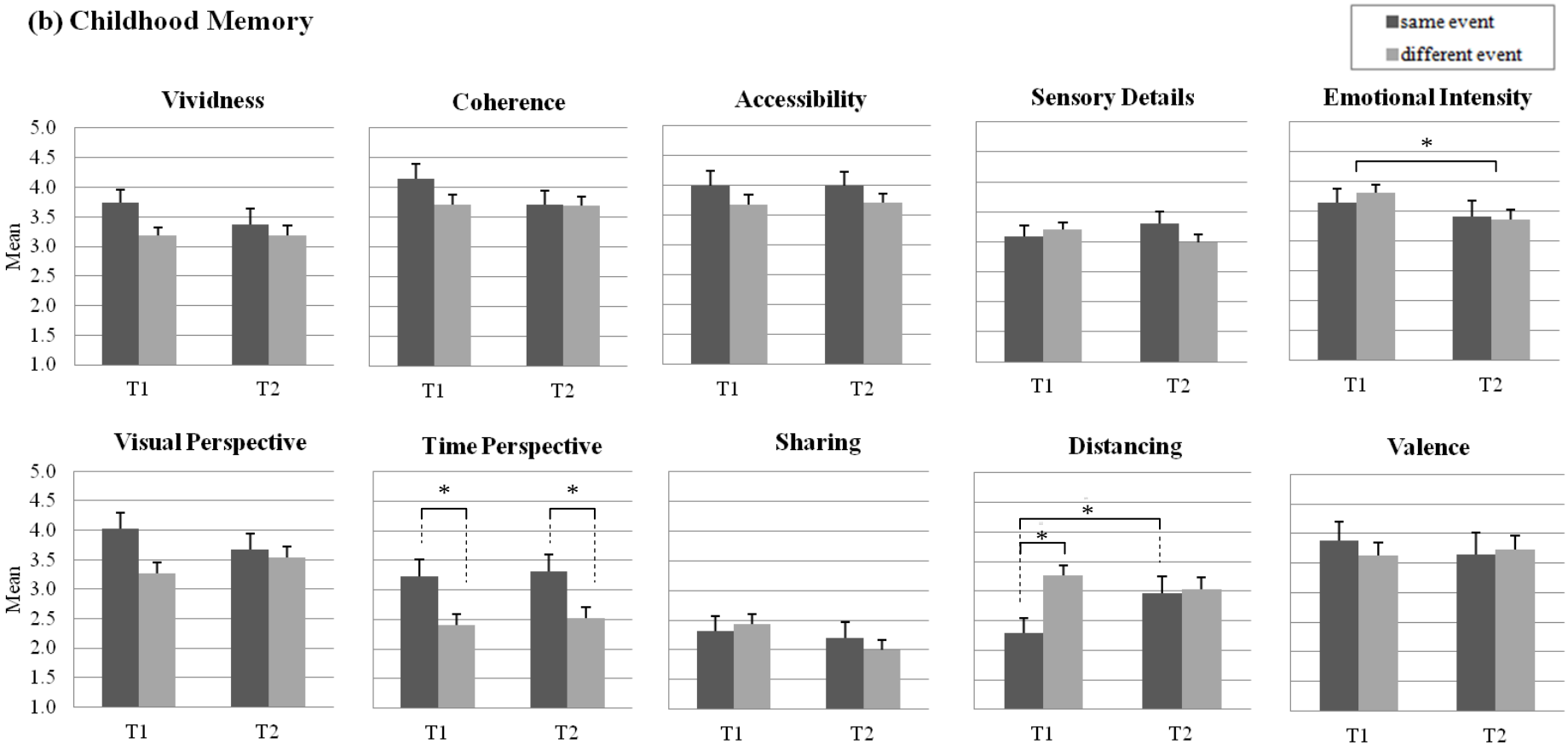


Figure 2 - Section (b): Estimates marginal means of MEQ scales at Time1 (T1) and Time2 (T2) for Childhood Memory. Error bars represent standard errors.

Table 3 – Correlations of affect and phenomenology in memories over time

	Turning Point Memory			Childhood Memory		
Dimension	Overall	Same	Different	Overall	Same	Different
Positive Affect	.52**	.77**	.19	.40**	.75**	.29+
Negative Affect	.65**	.73**	.45*	.38**	.77**	.27+
Vividness	.32*	.63**	.22	.50**	.79**	.41**
Coherence	.33*	.58**	.18	.28*	.69**	.15
Accessibility	.10	.34+	.01	.22	.49*	.12
Sensory Details	.40**	.39*	.41*	.33*	.58*	.29+
Emotional Intensity	.47**	.72**	.27	.43**	.66**	.38*
Visual Perspective	.33**	.32+	.36*	.21	.32	.18
Time Perspective	.34**	.71**	.12	.61**	.84**	.42**
Sharing	.60**	.64**	.50**	.45**	.79**	.25
Distancing	.38**	.53**	.25	.59**	.57*	.65**
Valence	.54**	.89**	.19	.40**	.81**	.26
Sample Size	N=61	N=30	N=31	N=58	N=18	N=40

Note. A total of 61 and 58 participants had respectively valid Turning Point and Childhood Memory at both sessions.
+ $p < .10$. * $p < .05$. ** $p < .01$.

(3) Psychological correlates of memory affect and phenomenology and their changes

Personality: Correlations between the personality traits and memory qualities for the full sample (N = 104) are shown in Table 2 (see above). Emotionally stable (low Neuroticism) and self-disciplined (high Conscientiousness) individuals tended to report memories that were more positive (and less negative) in affect. For the Turning Point Memory, Neuroticism was associated with Coherence (r = .25, p < .05), Sharing (r = -.29, p < .01) and Valence (r = -.25, p < .05); specifically, individuals higher in Neuroticism tended to retrieve more specific and negative memories, but shared them less with others. For the Childhood Memory, Neuroticism was negatively correlated with Visual Perspective; that is, individual higher in Neuroticism tended to retrieve their remote memories from a 3rd person perspective (r = -.27, p < .01). By contrast, Conscientiousness correlated with Vividness (r = .22, p < .05), Sharing (r = .36, p < .01) and Valence (r = .32, p < .01) in the Turning Point Memory; individuals higher in Conscientiousness tended to report more vivid and positive turning points, and to share them more with others. Conscientiousness was also associated with Vividness (r = .30, p < .01),

Coherence (r =. 21, $p < .05$), and Sensory Details ($r = .28$, $p < .01$) in the Childhood Memory; that is, individual higher in Conscientiousness tended to rate their early memories as more vivid and coherent, and rich of sensory details.

To test whether personality was associated with change in affect and phenomenology over time, each personality trait was correlated with residual change scores, computed by predicting the Time 2 memory ratings from the corresponding Time 1 ratings and saving the residuals. For the Turning Point Memory, Conscientiousness was associated with change in Distancing ($r = -.28$, $p < .05$), which indicated that individuals low in Conscientiousness tended to progressively distance themselves from their life-changing experiences. For the Childhood Memory, individual high in Neuroticism tended to report less Accessibility ($r = -.29$, $p < .05$), Sharing ($r = -.27$, $p < .05$) and Valence ($r = -.29$, $p < .05$) in their second memories than in their first memories. That is, over time, the childhood memory of participants high in Neuroticism became less accessible, less shared, and more negative. By contrast, individual high in Conscientiousness tended to report a more positive Valence ($r = .30$, $p < .05$) in their second Childhood Memory. There were no other significant correlations between the residual change scores and Neuroticism and Conscientiousness. Whether or not the memory reported at Time 2 was different from the memory reported at Time 1 did not moderate any of these effects.

Psychological outcomes: In the present sample, the memory variables were mostly unrelated to the measures of depression, positive functioning and life satisfaction. Participants with high levels of depressive symptoms tended to rate their Turning Point Memory (but not their Childhood Memory) as likely to be retrieved from a 3rd person visual perspective ($r = -.26$, $p < .01$), as negatively valanced ($r = -.34$, $p < .01$), and less frequently shared with others ($r = -.49$, $p < .01$). By contrast, participants with high scores on positive functioning and life

satisfaction rated their Turning Point Memory as high in Accessibility (r = .23 and .20, ps < .05), Sharing (r = .32 and .34, ps < .01) and Valence (r = .40 and .47, ps < .01).

To test whether changes in phenomenology were associated with changes in both depression and overall well-being, change scores of memory ratings were correlated with the residual change scores of each of the psychological outcomes. Increases in depressive symptoms over time was associated with decreases in Positive Affect (r = -.33, p < .01) and Valence (r = -.31, p < .05) for the Turning Point Memory only, whereas increases in positive functioning and life satisfaction was associated with increases in Positive Affect (rs ~ .30, ps < .05) only for the Childhood Memory.

Did phenomenology mediate the effect of personality on outcome variables?

Bootstrapping procedures (Preacher & Hayes, 2008) were applied to test whether memory phenomenology (and its changes) mediated the effect of personality measured at Time 1 on each of the positive/negative psychological outcomes measured at Time 2. As such, Personality scores at Time 1 (Neuroticism or Conscientiousness) were used as predictors, phenomenology scores at Time 1 (or phenomenology change scores) were used as mediators, and outcome variables of interest (depression, positive functioning or life satisfaction) were used as criterion (controlling Time 1 criterion data). Bootstrap results for the indirect effects showed that none fell in the 95% confidence intervals. Thus, phenomenology (or its changes) did not mediate personality association with depression, positive functioning or life satisfaction.

Discussion

Applying a longitudinal design, the present study examined the continuity of affect and phenomenology in two personal meaningful memories, a Turning Point Memory and a Childhood Memory. Overall, there was moderate continuity in memory ratings over a 40 days interval, at levels comparable to what was found in previous studies (Rubin et al., 2004; Sutin & Robins, 2005). The median test-retest coefficients were ~ .40 for both memory types, although higher correlations were observed when participants wrote about the same experiences (i.e. median *r* .68 for same event and .27 for different events). Even though mean-level changes were observed, dimensions like Vividness, Emotional Intensity, and Distancing were consistent across memories and over time. The present findings suggest that stable aspects of psychological functioning may shape the affective and phenomenological experience of autobiographical memory.

To date, relatively few studies have investigated the association between personality traits, such as Neuroticism and Conscientiousness, and memory phenomenology (though Rasmussen & Berntsen, 2010; Rubin & Siegler, 2004; Sutin & Robins, 2010). And, none correlated these personality traits with phenomenology changes. In the present sample, Neuroticism, which includes facets of Anxiety and Depression, was associated with more specific and negative turning point memories, which were also rarely shared with others. Although anxiety and depression are in general associated with impoverished memory (Sumner, 2012; Witheridge et al., 2010), specific negative information may be easily accessible to individuals high in Neuroticism at non-clinical levels of anxious-depressive symptoms. However, given the use of unconstrained memory requests, it is not possible to test whether these associations were moderated by specific memory valence or domain. On the other hand,

Conscientiousness was related to having more vivid and coherent memories in general (Sutin, 2008), and more positive and frequently shared Turning Point Memory, but not Childhood Memory, in particular. Contrary to expectations, only few phenomenological dimensions (i.e. Visual Perspective but not Coherence) showed significant correlations with psychological outcomes (i.e. depression). Moreover, though the need for more research, the present findings tentatively suggested that phenomenology changes over time are based on underlining individual differences.

Although a causal link cannot be drawn, autobiographical memory phenomenology was proposed as one dynamic process that translates basic tendencies (personality) into characteristic adaptations. For example, an individual high in Neuroticism (or low in Conscientiousness) may evaluate his/her current life satisfaction based on the subjective experience of his/her most meaningful memories. The degree to which he/she perceives such memories as distant from him/herself likely determines the degree to which he/she feels satisfied with life (Sutin, 2008). However, in the present sample, phenomenology (and its changes) was not a significant mediator of the longitudinal effects of personality on positive/negative outcome variables. Nevertheless, memory phenomenology remains an important aspect of the individual functioning. Autobiographical memory has been an object of successful interventions for the reduction of depressive-anxious symptoms (Dalgleish et al., 2014; Moradi et al., 2014) and has been identified as one of the mechanisms that underling long-term changes in personality dispositions (Sutin & Robins, 2005).

As noted before, the majority of participants chose to write about a different event at Time 2. When examining specific types of memories over time (e.g. 'earliest' memories), some studies reported high consistency in the events selected across sections (Jack & Hayne, 2010).

Individuals tended to identify the same experience as a key event, even after several years (Bauer et al., 2014; Leonard & Burn, 2006). However, other studies showed low consistency in event reports over time (McAdams et al., 2006; Sutin & Robins, 2005; Thorne et al., 1998), especially at detailed levels of analyses (e.g. information on location, activities, etc.; Drivdahl & Hyman, 2014). Nevertheless, these studies indicated relatively continuity in the emotional tone and motivational themes of the memories. The present work expands continuity to phenomenology ratings: Though content changes quickly, phenomenology remains relatively stable. In fact, one possible explanation of the high percentage of 'different events' reported at Time 2 may be related to participants' young age. Young adults may be especially open to variation and re-interpretation of their life story compared to older adults (McAdams & Olson, 2010).

A number of limitations need to be taken into account in interpreting the present findings. First, a significant drop-out of participants was observed at Time 2. Thus, only a part of the sample was tested longitudinally. Second, the alpha reliability of Accessibility, Sensory Detail and Time Perspective scales was poor for Turning Point Memory. Although they were retained (see Footnote 10 for details), caution is needed in interpreting the results for these scales. Third, the question of continuity was assessed only for Turning Point and Childhood Memory, but additional key events (e.g. low point, high point, etc.) can be of particular interest to study. Fourth, the sample was composed of non-clinical participants aged 20-40. Given that life story evolves over time, future studies should examine memory continuity in different age groups, combining self-report ratings with measurements of memory narrative (and content), and varying time-intervals between sessions. Moreover, given that memory phenomenology is particularly important in the clinical domain, further insights should be also obtained by examining memory continuity in clinical populations.

General Discussion

The phenomenology of a memory is what brings a past experience back to life during retrieval (Sutin & Robins, 2007; Tulving, 2002). Memory phenomenology has been linked to underlying stable dispositions—i.e. personality (Singer & Salovey, 1993), as well as to a variety of psychological outcomes. A cross-sectional and a longitudinal study were conducted on a large sample of American and Italian adults. In both studies, participants retrieved two 'key' personal memories, a Turning Point and a Childhood Memory, and rated the affect and phenomenology of each memory. Participants also completed self-reported measures of personality (i.e. Neuroticism and Conscientiousness) and measures of depression, well-being and life satisfaction. The present research found that phenomenological ratings tend (a) to show cross-sectional, age-related increases across adulthood (Study 1) and (b) to be moderately stable over time, regardless of memory content (Study 2). Interrelations among memory phenomenology, personality and psychological outcomes were also examined (Study 1 and Study 2). In particular, autobiographical memory phenomenology was proposed as a dynamic expression of personality functioning that partially explains adaptive/maladaptive psychological outcomes. The findings partially supported the hypothesized mediating effect of phenomenology on the personality association with psychological outcomes. The implications of each of these findings are discussed below.

Phenomenology across the adult lifespan

Contrary to the majority of studies that have compared small groups of young and old adults, Study 1 explored age differences in autobiographical memory in a large, stratified sample of Americans (N = 1,075) representing the adult lifespan (age range = 20–87). Applying the

MEQ, the study considered not just one memory dimension but the full-range of phenomenological experiences, with evidence of both linear and nonlinear trends in the memory ratings across adulthood. Although several studies have reported deficits in episodic retrieval in older adults (e.g., Piolino et al., 2010; Piolino et al., 2006), others have observed a linear increase in phenomenological ratings across age (e.g., Janssen et al., 2011; Kingo et al., 2013). Study 1 replicated this latter finding: Most of the phenomenology dimensions (e.g., Vividness) tended to increase cross-sectionally between early and middle adulthood, till later ages. There was also a significant quadratic effect for Accessibility ($p < .05$ for both memories) and Emotional Intensity ($p < .10$ and $p < .05$ for Turning Point and Childhood Memory, respectively), and approached significance for Coherence ($p < .10$ for Childhood Memory only) and Sensory Details ($p < .10$ for Turning Point Memory only). This pattern suggests that older adults had memories that were more vivid, coherent, temporally clear than younger adults, but also memories that were slightly less accessible and detailed. Of note, though small in size (highest $\beta = .18$ for Coherence), age effects on phenomenology were not accounted by other factors, i.e. the recency of the memory itself.

The findings may represent a real difference between the amount of recollection or a general tendency for older adults to rate many dimensions as higher (as suggested by Janssen et al., 2011). Still, it may represent preservation of important autobiographical memories over the lifespan; older adults still have well-rehearsed and phenomenologically-rich memories on which to rely on in time of need (Singer et al., 2007). It would be interesting to expand this line of research by combining rating scales with other measures of memory phenomenology—e.g., the coding vividness, coherence, and so on, directly from narratives of the memory. Detailed

recollections, as judged by the individual and others, may contribute to individuals' overall well-being, especially in later ages (e.g., Latorre et al., 2013).

The observed differences in phenomenology seem to reflect the progressive integration of memories into participants' life stories. Individuals may need time to comprehend the importance of past experiences, to relate and to integrate them with other important life moments. This process indeed extends through emerging adulthood into middle- and old-ages (McAdams & Olson, 2010), and may have an effect on memory phenomenology as individuals advance in age (Montebarocci et al., 2014). For instance, in Study 1, older participants rated their memories as more coherent and less distanced from their current self than younger adults. When examining life narratives, indeed, it has been observed a striving for meaning during early adulthood (Habermas et al., 2013). For younger adults, autobiographical stories appear to provide a means for self-exploration and self-understanding, while, for older adults, they appear to provide a means for stability (and coherence) (McLean, 2008).

Phenomenology continuity (and changes) over time

Applying a longitudinal design, Study 2 examined the continuity of memory phenomenology in a sample of Italians adults aged 20-40 years (N = 104). While the majority of the existing works focused on consistency or accuracy of memory accounts, fewer studies explored longitudinally the subjective experience of self-relevant memories. Replicating previous findings (Rubin et al., 2004; Sutin & Robins, 2005), Study 2 showed moderate continuity in memory ratings over the 4-week interval, even if the majority of participants choose to recall a different Turning Point and Childhood Memory at follow-up. Specifically, test-retest coefficients of MEQ scales had a median of about .40. Even though mean-level

changes were observed, dimensions like Vividness, Emotional Intensity, and Distancing were consistent across memories and over time.

These findings suggest that stable individual differences may shape the retrieval of memories. Indeed, Neuroticism and Conscientiousness were associated with some of the phenomenological dimensions and changes in phenomenology over time. For example, participants low in Conscientiousness tended to distance more from their past experiences at follow-up. These individuals may find difficult to integrate their turning-point experience, lacking of self-coherence. A longer follow-up (i.e. years), however, is needed to explore both memory and personality changes and their reciprocal relation.

Individuals may identify the same experience as a key event even after several years (Leonard & Burn, 2006) or choose different events as the most meaningful (McAdams et al., 2006). Over the short follow-up interval in Study 2, participants were just as likely to retrieve a memory of a different event as the same one. Despite the change in memory content, the phenomenology ratings remained relatively stable. From a clinical perspective, the question of consistency/continuity of autobiographical memory is of particular importance. Does stability vs. change in memory qualities determine long-term positive/negative adaptations? The present research suggests that the answer is no, since phenomenology was unrelated to changes in the psychological outcomes. The high re-test correlation for these outcomes indicates stability (see Appendix C), which limits the ability to predict change. Further studies are needed to test whether memory continuity varies as a function of participants' characteristics—i.e., by considering different age groups, not only young adults—and clinical conditions (e.g. depression), and over a longer period of time.

Phenomenology mediates personality and characteristic adaptations

Autobiographical memory phenomenology was proposed as one dynamic process that translates basic tendencies (personality) into characteristic adaptations. In other words, autobiographical memory may be a dynamic expression of personality functioning that potentially explains the association between the traits and psychological outcomes. Sutin (2008) found phenomenology to mediate well-established relations between Neuroticism and subjective health, and between Conscientiousness and achievement-related strivings. The present research expanded previous work by: (1) considering different types of characteristic adaptations as outcomes (i.e. current depressive symptoms, overall well-being and life satisfaction), and (2) applying both a cross-sectional (Study 1) and a longitudinal design (Study 2).

Only Study 1 provided support for the proposed mechanism. Specifically, in Study 1, coherence and memory affect partially mediated the personality-depression association: Individuals high in Neuroticism and low in Conscientiousness experienced more depressive symptoms, in part, because they mainly relied on incoherent and affectively negative memories. Individuals high in Neuroticism also had lower levels of well-being in part because they tended to distance themselves from their past experiences, while conscientious individuals tended to report more phenomenologically intense and affectively positive memories, which enhanced their sense of well-being and life satisfaction. However, when using a longitudinal design (Study 2), none of the phenomenological dimensions mediated the effect of personality on the psychological outcome variables. Of note, Study 1 and Study 2 differ in sample size, composition, and cultural background; a larger sample may have provided the power needed to detect mediating effects as in Study 1. Mediating effects are expected to be modest in size, as

found in Study 1 (maximum $\Delta\beta$ = .06), such as other variables may intervene in predicting positive vs. negative adaptations over time.

A further consideration regards causality (and the direction of causality). For instance, individuals high in Neuroticism (or low Conscientiousness) may have dim or fragmented memories because they have higher levels of depressive symptoms (or lower well-being). It is not possible to disentangle whether the way memories are recalled exacerbates depression or whether higher levels of depression disrupt memory construction. Still, autobiographical memory and personality reciprocally influence each other: Trait dispositions likely shape memory content, and influence the interpretation of past events, which in turn are aspects potentially implicated in personality development and change over time (Sutin et al., 2010; Sutin & Robins, 2005).

Still, phenomenology remains an important aspect of autobiographical memory to be explored. The relation between personality and the experience of autobiographical memory may shed light on how individuals construe life story memories, and how the story they tell promotes social-emotional adjustment, psychological growth and wisdom (Blagov & Singer, 2004). However, additional longitudinal studies are needed to clarify the interrelation between memory, personality and psychological health.

Clinical implications

Present findings corroborate the importance of specific memory dimensions, such as specificity/coherence, in determining positive/negative adaptations. As highlighted by McAdams (2006b), construing a coherent story contributes to psychological health. Individuals who are able to meaningfully connect their past experiences can use those experiences to understand

themselves, or tell others about them, increasing a sense of self-continuity. Phenomenologically-rich memories serve positive functions: They support individuals' goal pursuits, helping them to plan future behaviors (Blagov & Singer, 2004). Conversely, a lack of specificity/coherence in memory characterizes many clinical conditions, such as depression and post-traumatic stress disorder (e.g., Boelen et al., 2014; Sumner et al., 2013). Although the retrieval of vague memories may reduce the emotional impact of an event, ultimately it may lead to greater psychological distress by hindering memory positive functions.

Autobiographical memories represent a window into the psychological functioning of the individual and constitute the daily material to work on during clinical interactions (Singer & Bonalume, 2010; Singer & Conway, 2011). Both researchers and clinical practitioners have identified practice of autobiographical recollection as a useful tool in psychotherapy. For example, writing about a negative (potentially traumatic) event has been found to have beneficial effects (Pennebaker, 1997). In fact, Rubin, Boals, and Klein (2010) suggested that only the act of retrieving and rating (thinking about) a stressful memory leads to significant reductions in event-related distress; the repeated reliving of the event in a safe environment leads to a reduction of negative valence, emotional intensity and availability of the memory (Rubin et al., 2010). More recently, group-based intervention programs have been developed to alleviate depressive symtomatology by intervening on depression-related memory difficulties (e.g., MEST; Dalgleish et al., 2014; Reas et al., 2009). There is also increasing evidence of the efficacy of Life Review/reminiscence interventions in alleviating depression symptoms and enhancing life satisfaction in the elderly (Latorre et al., 2015; Serrano et al., 2004).

However, further studies are needed to identify the mechanisms behind the utility of such therapeutic approaches (Dalgleish et al., 2014; Sloan & Marx, 2004). A deeper understanding of

autobiographical memory processes, and their relations with personality and positive/negative outcome variables, would help to design more effective interventions.

Limitations and future directions

The present research suggests a number of possibilities for future studies. First, only two memories were sampled here. Other 'key' events (e.g. low point, high point, etc.) in addition to Turning Point and Childhood Memory should be also collected in future work. It is also worth noting that the present studies did not constrain subjects for the valence, or the domain, (e.g., work, love, etc.) of memories. In particular, in explaining the relation between personality and psychological outcomes, positive vs. negative events may have different weight. For example, individuals higher in neuroticism may have higher levels of depressive symptoms because they have more incoherent or fragmented positive (both not negative) memories. Again, individuals higher in conscientiousness may have higher levels of well-being because they have more coherent and detailed positive (but not negative) memories. Moreover, the interrelation between personality, memory and outcome variables is likely influenced by how central the event is to participants' life story and identity (e.g., Berntsen & Rubin, 2007). All these aspect need to be explored in further studies.

Second, as noted above, the current research focused exclusively on self-report data. Self-ratings of memory phenomenology require participants to first produce the memory and then to reflect on the memory and rate it. As such, participants engage in two separate (consecutive) cognitive tasks. An alternative way would be to directly code affect and phenomenology from the memory itself. Few works have combined subjective and objective ratings of memory characteristics (though see e.g., Rubin, 2011; Sumner et al., 2013). Waters et

al. (2013) found that positive and negative memories did not differ in either narrative quality or subjective ratings, when controlling for retention interval and emotional intensity. Similar results were obtained by Rubin (2011). However, other studies found no correlations between questionnaire and narrative measures (e.g., Bohanek, Fivush, & Walker, 2005). As such, different approaches may tap different aspects of memory quality (as suggested by Waters et al., 2013). Both self-report questionnaires and narrative measures may provide unique information about how participants understand and experience their most important memories. It would also be informative to examine the contents (themes) of memories, as coded by independent observers.

Third, there is a need for additional longitudinal studies. Existing work focused mainly on the consistency or accuracy of the memory content, partially neglecting other important memory components. It would be interesting to extend Study 2 to examine continuity (and change) in autobiographical memory in different age groups, and varying time-intervals between sessions: Are older participants more stable than younger participants? How would the trajectory change over longer time intervals?

Lastly, the present findings are based on non-clinical samples, but memory phenomenology is particularly important in the clinical domain. Memory phenomenology has been associated with distress symptoms in both clinical and non-clinical samples (Rubin et al., 2008; Sutin & Gillath, 2009), but several questions are still open: What is the longitudinal trajectory of phenomenology in clinical samples? Are individuals with clinically relevant symptoms more or less stable than individuals with low levels of symptoms?

References

Addis, D. R., Wong, A. T., & Schacter, D. L. (2008). Age-related changes in the episodic simulation of future events. *Psychological Science*, *19*, 33–41. doi: 10.1111/j.1467-9280.2008.02043.x

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Thousand Oaks, CA: Sage.

Alea, N., & Bluck, S. (2003). Why are you telling me that? A conceptual model of the social function of autobiographical memory. *Memory*, *11*, 165–178. doi: 10.1080/741938207

Alea, N., McLean, K. C., & Vick, S. C. (2010). The story of us: Examining marital quality via positive and negative relationship narratives. In K. S. Pearlman (Ed.), *Marriage: Role, stability and conflict* (pp. 1–29). New York: Nova Science Publishers.

Baerger, D. R., & McAdams, D. P. (1999). Life story coherence and its relation to psychological well-being. *Narrative Inquiry*, *9*, 69–96. doi: 10.1075/ni.9.1.05bae

Bauer, J. J., McAdams, D. P., & Sakaeda, A. R. (2005). Interpreting the good life: Growth memories in the lives of mature, happy people. *Journal of Personality and Social Psychology*, *88*, 203–217. doi: 10.1037/0022-3514.88.1.203

Bauer, P. J., Tasdemir-Ozdes, A., & Larkina, M. (2014). Adults' reports of their earliest memories: Consistency in events, ages, and narrative characteristics over time. *Consciousness and Cognition*, *27*, 76–88. doi: 10.1016/j.concog.2014.04.008

Beaman, A., Pushkar, D., Etezadi, S., Bye, D., & Conway, M. (2007). Autobiographical memory specificity predicts social problem-solving ability in old and young adults. *The Quarterly Journal of Experimental Psychology*, *60*, 1275–1288. doi: 10.1080/17470210600943450

Beike, D. R., & Wirth-Beaumont, E. T. (2005). Psychological closure as a memory phenomenon. *Memory, 13*, 574–593.

Bergouignan, L., Lemogne, C., Fouchier, A., Longin, E., Vistoli, D., Allilaire, J. F., & Fossati, P. (2008). Field perspective deficit for positive memories characterizes autobiographical memory in euthymic depressed patients. *Behaviour Research and Therapy*, *46*, 322–333. doi: 10.1016/j.brat.2007.12.007

Berntsen, D. (2001). Involuntary memories of emotional events: Do memories of traumas and extremely happy events differ? *Applied Cognitive Psychology*, *15*, 135–158. doi: 10.1002/acp.838

Berntsen, D., & Rubin, D. C. (2006). Emotion and vantage point in autobiographical memory. *Cognition & Emotion, 20*, 1193–1215. doi: 10.1080/02699930500371190

Berntsen, D., & Rubin, D. C. (2007). When a trauma becomes a key to identity: Enhanced integration of trauma memories predicts posttraumatic stress disorder symptoms. *Applied Cognitive Psychology*, *21*, 417–443. doi: 10.1002/acp.1290

Berntsen, D., Rubin, D. C., & Siegler, I. C. (2011). Two version of life: Emotionally negative and positive life events have different role in the organization of life story and identity. *Emotion, 11*, 1190–1201. doi: 10.1037/a0024940

Berntsen, D., & Thomsen, D. K. (2005). Personal memories for remote historical events: Accuracy and clarity of flashbulb memories related to World War II. *Journal of Experimental Psychology: General*, *134*, 242–257. doi: 10.1037/0096-3445.134.2.242

Blagov, P. S., & Singer, J. A. (2004). Four dimensions of self-defining memories (specificity, meaning, content, and affect) and their relationships to self-restraint, distress, and

repressive defensiveness. *Journal of Personality, 72*, 481–511. doi: 10.1111/j.0022-3506.2004.00270.x

Bluck, S., & Habermas, T. (2000). The life story schema. *Motivation and Emotion, 24*, 121–147. doi: 10.1023/A:1005615331901

Boelen, P. A., Huntjens, R. J., & van den Hout, M. A. (2014). Concurrent and prospective associations of habitual overgeneral memory and prospection with symptoms of depression, general anxiety, obsessive compulsiveness, and post-traumatic stress. *Memory, 22*, 747–758. doi: 10.1080/09658211.2013.824985

Bohanek, J. G., Fivush, R., & Walker, E. (2005). Memories of positive and negative emotional events. *Applied Cognitive Psychology, 19*, 51–66. doi: 10.1002/acp.1064

Bowlby, J. (1969/1982). *Attachment and loss, Vol. 1: Attachment.* London, England: Hogarth Press.

Bowlby, J. (1973). *Attachment and loss, Vol. 2: Separation.* London, England: Hogarth Press.

Bowlby, J. (1980). *Attachment and loss, Vol. 3: Loss, sadness and depression.* London, England: Hogarth Press.

Boyacioglu, I., & Akfirat, S. (2014). Development and psychometric properties of a new measure for memory phenomenology: The Autobiographical Memory Characteristics Questionnaire. *Memory*. Advance online publication. doi: 10.1080/09658211.2014.953960

Brewer, W. F. (1986). What is autobiographical memory? In Rubin, D., *Autobiographical Memory* (pp. 25–49). New York: Cambridge University Press.

Brewin, C. R., Gregory, J. D., Lipton, M., & Burgess N. (2010). Intrusive images in psychological disorders: characteristics, neural mechanisms, and treatment implications. *Psychological Review*, *117*, 210–232. doi: 10.1037/a0018113

Brown, R., & Kulik, J. (1977). Flashbulb memories. *Cognition*, *5*, 73–99. doi: 10.1016/0010-0277(77)90018-X

Bylsma, L. M., Taylor-Clift, A., & Rottenberg, J. (2011). Emotional reactivity to daily events in major and minor depression. *Journal of Abnormal Psychology*, *120*, 155–167. doi: 10.1037/a0021662

Comblain, C., D'Argembeau, A., & Van der Linden, M. (2005). Phenomenal characteristics of autobiographical memories for emotional and neutral events in older and younger adults. *Experimental Aging Research*, *31*, 173–189. doi: 10.1080/03610730590915010

Conway, M. A. (2005). Memory and self. *Journal of Memory and Language, 53*, 594–628. doi: 10.1016/j.jml.2005.08.005

Conway, M. A. (2009). Episodic memories. *Neuropsychologia*, *47*, 2305–2313. doi: 10.1016/j.neuropsychologia.2009.02.003

Conway, M. A., & Holmes, A. (2004). Psychosocial stages and the accessibility of autobiographical memories across the life cycle. *Journal of Personality*, *72*, 461–480. doi: 10.1111/j.0022-3506.2004.00269.x

Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the Self-Memory System. *Psychological Review*, *107*, 261–288. doi: 10.1037/0033-295X.107.2.261

Conway, M. A., & Rubin, D. C. (1993). The structure of autobiographical memory. In A. E. Collins, S. E. Gathercole, M. A. Conway, & P. E. M. Morris (Eds.), *Theories of memory* (pp. 103–137). Hove, Sussex, England: Erlbaum.

Conway, M. A., Singer, J. A., & Tagini, A. (2004). The self and autobiographical memory: Correspondence and coherence. *Social Cognition*, *22*, 491–529. doi: 10.1521/soco.22.5.491.50768

Conway, A. R., Skitka, L. J., Hemmerich, J. A., & Kershaw, T. C. (2009). Flashbulb memory for 11 September 2001. *Applied Cognitive Psychology*, *23*, 605–623. doi: 10.1002/acp.1497

Conway, M. A., Wang, Q., Hanyu, K., & Haque, S. (2005). A cross-cultural investigation of autobiographical memory on the universality and cultural variation of the reminiscence bump. *Journal of Cross-Cultural Psychology*, *36*, 739–749. doi: 10.1177/0022022105280512

Crawley, R. A., (2010). Closure of autobiographical memories: The effects of written recounting from first- or third-person visual perspective. *Memory*, *18*, 900–917. doi: 10.1080/09658211.2010.524650

Curci, A., & Luminet, O. (2006). Follow-up of a cross-national comparison on flashbulb and event memory for the September 11th attacks. *Memory*, *14*, 329–344. doi: 10.1080/09658210500340816

D'Argembeau, A., Comblain, C., & Van der Linden, M. (2003). Phenomenological characteristics of autobiographical memories for positive, negative, and neutral events. *Applied Cognitive Psychology*, *17*, 281–294. doi: 10.1002/acp.856

D'Argembeau, A., & Van der Linden, M. (2008). Remembering pride and shame: Self-enhancement and the phenomenology of autobiographical memory. *Memory, 16*, 538–547. doi: 10.1080/09658210802010463

D'Argembeau, A., Van der Linden, M., d'Acremont, M., & Mayers, I. (2006). Phenomenal characteristics of autobiographical memories for social and non-social events in social phobia. *Memory, 4*, 637–647. doi: 10.1080/09658210600747183

Dalgleish, T., Bevan, A., McKinnon, A., Breakwell, L., Mueller, V., Chadwick, I., … Werner-Seidler, A. (2014). A comparison of MEmory Specificity Training (MEST) to education and support (ES) in the treatment of recurrent depression: Study protocol for a cluster randomised controlled trial. *Trials*, *15*, 293. doi: 10.1186/1745-6215-15-293

Dalgleish, T., Williams, J. M. G., Golden, A. J., Perkins, N., Barrett, L. F., Barnard, P., … Watkins, E. (2007). Reduced specificity of autobiographical memory and depression: The role of executive control. *Journal of Experimental Psychology: General*, *136*, 23–42. doi: 10.1037/0096-3445.136.1.23

Debeer, E., Hermans, D., & Raes, F. (2009). Associations between components of rumination and autobiographical memory specificity as measured by a Minimal Instructions Autobiographical Memory Test. *Memory*, *17*, 892–903. doi: 10.1080/09658210903376243

Demiray, B., & Freund, A. M. (2015). Michael Jackson, Bin Laden and I: Functions of positive and negative, public and private flashbulb memories. *Memory*, *23*, 487–506. doi: 10.1080/09658211.2014.907428

Demiray, B., & Janssen, S. M. J. (2015). The self-enhancement function of autobiographical memory. *Applied Cognitive Psychology*, *29*, 49–60. doi: 10.1002/acp.3074

Demorest, A. P. (1995). The personal script as a unit of analysis for the study of personality. *Journal of Personality, 63,* 569–592. doi: 10.1111/j.1467-6494.1995.tb00506.x

DeNeve, K. M., & Cooper, H. (1998). The happy personality: A meta-analysis of 137 personality traits and subjective well-being. *Psychological Bulletin, 124,* 197–229. doi: 10.1037/0033-2909.124.2.197

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2009). New measures of well-being: Flourishing and positive and negative feelings. *Social Indicators Research, 39,* 247–266. doi: 10.1007/978-90-481-2354-4_12

Drivdahl, S. B., Hyman, I. E. Jr. (2014). Fluidity in autobiographical memories: Relationship memories sampled on two occasions. *Memory, 22,* 1070–1081. doi: 10.1080/09658211.2013.866683

Erikson, E. H. (1950). *Childhood and society.* New York: W. W. Norton & Company.

Erikson, E. H. (1997). *The life cycle completed.* New York: W. W. Norton & Company.

Fitzgerald, J. M., & Broadbridge, C. L. (2013). Latent constructs of the Autobiographical Memory Questionnaire: A recollection-belief model of autobiographical experience. *Memory, 21,* 230–248. doi: 10.1080/09658211.2012.725736

Fivush, R. (2011). The development of autobiographical memory. *Annual Review of Psychology, 62,* 559–582. doi: 10.1146/annurev.psych.121208.131702

Ford, J. H., Rubin, D. C., & Giovanello, K. S. (2014). Effects of task instruction on autobiographical memory specificity in young and older adults. *Memory, 22,* 722–736. doi: 10.1080/09658211.2013.820325

Fossati, A., Borroni, S., Marchione, D., & Maffei, C. (2011). The Big Five Inventory (BFI): Reliability and validity of its Italian translation in three independent nonclinical samples.

European Journal of Psychological Assessment, *27*, 50–58. doi: 10.1027/1015-5759/a000043

Freud, S. (1915/1957). Repression. In *Freud's collected papers* (Vol. IV). London: Hogarth Press.

Friedman, H. S., & Kern, M. L. (2014). Personality, well-being, and health. *Annual Review of Psychology, 65*, 719–742. doi: 10.1146/annurev-psych-010213-115123

Galton, F. (1879). Psychometric facts. *The Nineteenth Century*, *5*, 425–433.

Goddard, L., Dritschel, B., & Burton, A. (1996). Role of autobiographical memory in social problem solving and depression. *Journal of Abnormal Psychology*, *105*, 609–616. doi: 10.1037/0021-843X.105.4.609

Goddard, L., Dritschel, B., & Burton, A. (1997). Social problem solving and autobiographical memory in non-clinical depression. *British Journal of Clinical Psychology*, *36*, 449–451. doi: 10.1111/j.2044-8260.1997.tb01252.x

Goddard, L., Pring, L., & Felmingham, N. (2005). The effects of cue modality on the quality of personal memories retrieved. *Memory, 13*, 79–86. doi: 10.1080/09658210344000594

Griffith, J. W., Sumner, J. A., Raes, F., Barnhofer, T., Debeer, E., & Hermans, D. (2012). Current psychometric and methodological issues in the measurement of overgeneral autobiographical memory. *Journal of Behavior Therapy and Experimental Psychiatry*, *43*, Supplement 1, S21–S31. doi: 10.1016/j.jbtep.2011.05.008

Habermas, T. (2007). How to tell a life: The development of the cultural concept of biography. *Journal of Cognition and Development, 8*, 1–31. doi: 10.1207/s15327647jcd0801_1

Habermas, T. & Berger, N. (2011). Retelling everyday emotional events: Condensation, distancing, and closure. *Cognition & Emotion, 25,* 206–219. doi: 10.1080/02699931003783568

Habermas, T., & Bluck, S. (2000). Getting a life: The emergence of the life story in adolescence. *Psychological Bulletin, 126,* 748–769. doi: 10.1037/0033-2909.126.5.748

Habermas, T., & de Silveira, C. (2008). The development of global coherence in life narratives across adolescence: Temporal, causal, and thematic aspects. *Developmental Psychology, 44,* 707–721. doi: 10.1037/0012-1649.44.3.707

Habermas, T., Diel, V., & Welzer, H. (2013). Lifespan trends of autobiographical remembering: Episodicity and search for meaning. *Consciousness and Cognition, 22,* 1061–1073. doi: 10.1016/j.concog.2013.07.010

Harley, K., & Reese, E. (1999). Origins of autobiographical memory. *Developmental Psychology, 35,* 1338–1348. doi: 10.1037/0012-1649.35.5.1338

Harris, C. B., Barnier, A. J., Sutton, J., & Keil, P. G. (2010). How did you feel when "The Crocodile Hunter" died? Voicing and silencing in conversation influences memory for an autobiographical event. *Memory, 18,* 185–197. doi: 10.1080/09658210903153915

Hermans, D., de Decker, A., de Peuter, S., Raes, F., Eelen, P., & Williams, J. M. G. (2008). Autobiographical memory specificity and affect regulation: Coping with a negative life event. *Depression and Anxiety, 25,* 787–792. doi: 10.1002/da.20326

Hermans, D., Vandromme, H., Debeer, E., Raes, F., Demyttenaere, K., Brunfaut, E., & Williams, J. M. G. (2008). Overgeneral autobiographical memory predicts diagnostic status in depression. *Behaviour Research and Therapy, 46,* 668–677. doi: 10.1016/j.brat.2008.01.018

Howe, M. L., & Courage, M. L. (1997). The emergence and early development of autobiographical memory. *Psychological Review*, *104*, 499–523. doi: 10.1037/0033-295X.104.3.499

Jack, F., & Hayne, H. (2010). Childhood amnesia: Empirical evidence for a two-stage phenomenon. *Memory*, *18*, 831–844. doi: 10.1080/09658211.2010.510476

Janssen, S. M. J., Rubin, D. C. & St. Jacques, P. L. (2011). The temporal distribution of autobiographical memory: Changes in reliving and vividness over the lifespan do not explain the reminiscence bump. *Memory & Cognition*, *39*, 1–11. doi: 10.3758/s13421-010-0003-x

Jobson, L., & O'Kearney, R. (2008). Cultural differences in retrieval of self-defining memories. *Journal of Cross-Cultural Psychology*, *39*, 75–80. doi: 10.1177/0022022107312073

John, O. P., & Srivastava, S. (1999). The Big-Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (Vol. 2, pp. 102–138). New York: Guilford Press.

Johnson, M. K., Foley, M. A., Suengas, A. G., & Raye, C. L. (1988). Phenomenal characteristics of memories for perceived and imagined autobiographical events. *Journal of Experimental Psychology: General*, *117*, 371–376. doi: 10.1037/0096-3445.117.4.371

Joormann, J., & Siemer, M. (2004). Memory accessibility, mood regulation, and dysphoria: Difficulties in repairing sad mood with happy memories? *Journal of Abnormal Psychology*, *113*, 179–188. doi: 10.1037/0021-843X.113.2.179

Kangas, M., Henry, J. L., & Bryant, R. A. (2005). A prospective study of autobiographical memory and posttraumatic stress disorder following cancer. *Journal of Consulting and Clinical Psychology*, *73*, 293–299. doi: 10.1037/0022-006X.73.2.293

Kenny, L.M., & Bryant, R. A. (2007). Keeping memories at an arm's length: Vantage point of trauma memories. *Behavior Research and Therapy, 45,* 1915–1920. doi: 10.1016/j.brat.2006.09.004

Kingo, O. S., Berntsen, D., & Krøjgaard, P. (2013). Adults' earliest memories as a function of age, gender, and education in a large stratified sample. *Psychology and Aging, 28,* 646–653. doi: 10.1037/a0031356

Kleim, B., & Ehlers, A. (2008). Reduced autobiographical memory specificity predicts depression and posttraumatic stress disorder after recent trauma. *Journal of Consulting and Clinical Psychology, 76,* 231–242. doi: 10.1037/0022-006X.76.2.231

Klein, D. N., Kotov, R., & Bufferd, S. J. (2011). Personality and depression: Explanatory models and review of the evidence. *Annual Review of Clinical Psychology, 7,* 269–295. doi: 10.1146/annurev-clinpsy-032210-104540

Kopelman, M. D., Wilson, B. A., & Baddeley, A. D. (1989). The autobiographical memory interview: A new assessment of autobiographical and personal semantic memory in amnesic patients. *Journal of Clinical and Experimental Neuropsychology, 11,* 724–744. doi: 10.1080/01688638908400928

Koppel, J., & Berntsen, D. (2015). The peaks of life: The differential temporal locations of the reminiscence bump across disparate cueing methods. *Journal of Applied Research in Memory and Cognition, 4,* 66–80. doi: 10.1016/j.jarmac.2014.11.004

Koppel, J., Brown, A. D., Stone, C. B., Coman, A., & Hirst, W. (2013). Remembering President Barack Obama's inauguration and the landing of US Airways Flight 1549: A comparison of the predictors of autobiographical and event memory. *Memory, 21,* 798–806. doi: 10.1080/09658211.2012.756040

Kremers, I. P., Spinhoven, P., & Van der Does, A. J. W. (2004). Autobiographical memory in depressed and non-depressed patients with borderline personality disorder. *British Journal of Clinical Psychology*, *43*, 17–29. doi: 10.1348/014466504772812940

Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal General Internal Medicine*, *16*, 606–613. doi: 10.1046/j.1525-1497.2001.016009606.x

Kvavilashvili, L., & Ellis, J. (2004). Ecological validity and the real-life/laboratory controversy in memory research: A critical and historical review. *History & Philosophy of Psychology*, *6*, 59–80.

Kvavilashvili, L., Mirani, J. Schlagman, S., Erskine, J. A. K., & Kornbrot, D. E. (2010). Effects of age on phenomenology and consistency of flashbulb memories of September 11 and a staged control event. *Psychology and Aging*, *25*, 391–404. doi: 10.1037/a0017532

Lardi, C., D'Argembeau, A., Chanal, J., Ghisletta, P., & Van der Linden, M. (2010). Further characterization of self-defining memories in young adults: A study of a Swiss sample. *Memory*, *18*, 293–309. doi: 10.1080/09658211003601522

Latorre, J. M., Ricarte, J. J., Serrano, J.P., Ros, L., Navarro, B., & Aguilar, M.J. (2013). Performance in autobiographical memory of older adults with depression symptoms. *Applied Cognitive Psychology*, *27*, 167–172. doi: 10.1002/acp.2891

Latorre, J. M., Serrano, J. P., Ricarte, J., Bonete, B., Ros, L., & Sitges, E. (2015). Life Review based on remembering specific positive events in active aging. *Journal of Aging and Health*, *27*, 140–157. doi: 10.1177/0898264314541699

Lemogne, C., Bergouignan, L., Boni, C., Gorwood, P., Paolissolo, A., & Fossati, P. (2009). Genetics and personality affect visual perspective in autobiographical memory. *Consciousness and Cognition*, *18*, 823–830. doi: 10.1016/j.concog.2009.04.002

Lemogne, C., Piolino, P., Friszer, S., Claret, A., Girault, N., Jouvent, R., ... Fossati, P. (2006). Episodic autobiographical memory in depression: Specificity, autonoetic consciousness, and self-perspective. *Consciousness and Cognition*, *15*, 258–268. doi: 10.1016/j.concog.2005.07.005

Leonard, R., & Burns, A. (2006). Turning points in the lives of midlife and older women: Five-year follow-up. *Australian Psychologist*, *41*, 28–36. doi: 10.1080/00050060500391902

Levine, B., Svoboda, E., Hay, J. F., Winocur, G., & Moscovitch, M. (2002). Aging and autobiographical memory: Dissociating episodic from semantic retrieval. *Psychology and Aging*, *17*, 677–689. doi: 10.1037/0882-7974.17.4.677

Lilgendahl, J. P., & McAdams, D. P. (2011). Constructing stories of self-growth: How individual differences in patterns of autobiographical reasoning relate to well-being in midlife. *Journal of Personality*, *79*, 391–428. doi: 10.1111/j.1467-6494.2010.00688.x

Linton, M. (1975). Memory for real-world events. In D. A. Norman, & D. E. Rumelhart (Eds.), *Explorations in cognition* (pp. 376–404). San Francisco: Freeman.

Linton, M. (1986). Ways of searching and the contents of memory. In D.C. Rubin, (Ed.), *Autobiographical Memory* (pp. 50–67). Cambridge: Cambridge University Press. doi: 10.1017/CBO9780511558313.007

Lorenzetti, R., & Lugli, L. (2012). Sharing autobiographical memories: Effects of arousal and memory. *Studies in Communication Sciences*, *12*, 53–57. doi: 10.1016/j.scoms.2012.06.011

Luchetti, M., & Sutin, A. R. (2015). Measuring the phenomenology of autobiographical memory: A short-form of the Memory Experiences Questionnaire. *Manuscript under revision.*

Luchetti, M., Montebarocci, O. Rossi, N., Cutti, A. G., & Sutin, A. R. (2014). Autobiographical memory and psychological distress in a sample of upper-limb amputees. *PLoS One*, 9, e99803. doi: 10.1371/journal.pone.0099803

Maccallum, F., & Bryant, R. A. (2008). Self-defining memories in complicated grief. *Behaviour Research and Therapy*, *46*, 1311–1315. doi: 10.1016/j.brat.2008.09.003

Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist, 41*, 954–969. doi: 10.1037/0003-066X.41.9.954

Mazzotti, E., Fassone, G., Picardi, A. Sagoni, E., Ramieri, L., Lega, I., ... Pasquini, P. (2003). The Patient Health Questionnaire (PHQ) for the screening of psychiatric disorders: a validation study versus the Structured Clinical Interview for DSM-IV Axis I (SCID-I) *Italian Journal of Psychopathology*, *9*, 235–242.

McAdams, D. P. (1985). *Power, intimacy, and the life story: Personological inquiries into identity*. New York: Guilford Press.

McAdams, D. P. (2001). The psychology of life stories. *Review of General Psychology*, *5*, 100–122. doi: 10.1037/1089-2680.5.2.100

McAdams, D. P. (2006a). The redemptive self: Generativity and the stories Americans live by. *Research in Human Development*, *3*, 81–100. doi: 10.1080/15427609.2006.9683363

McAdams, D. P. (2006b). The problem of narrative coherence. *Journal of Constructivist Psychology*, *19*, 109–125. doi: 10.1080/10720530500508720

McAdams, D. P. (2008). *The life story interview*. Retrieved from: http://www.sesp.northwestern.edu/docs/LifeStoryInterview.pdf

McAdams, D. P., Bauer, J. J., Sakaeda, A. R., Anyidoho, N. A., Machado, M. A., Magrino-Failla, K., … Pals, J. L. (2006). Continuity and change in the life story: A longitudinal study of autobiographical memories in emerging adulthood. *Journal of Personality*, *74*, 1371–1400. doi: 10.1111/j.1467-6494.2006.00412.x

McAdams, D. P., & De St. Aubin, E. (1992). A theory of generativity and its assessment through self-report, behavioral acts, and narrative themes in autobiography. *Journal of Personality and Social Psychology*, *62*, 1003–1015. doi: 10.1037/0022-3514.62.6.1003

McAdams, D. P., De St. Aubin, E., & Logan, R. L. (1993). Generativity among young, midlife, and older adults. *Psychology and Aging*, *8*, 221–230. doi: 10.1037/0882-7974.8.2.221

McAdams, D. P., & Olson, B. D. (2010). Personality development: Continuity and change over the life course. *Annual Review of Psychology*, *61*, 517–542. doi: 10.1146/annurev.psych.093008.100507

McAdams, D. P., & Pals, J. L. (2006). A new Big Five: Fundamental principles for an integrative science of personality. *American Psychologist*, *61*, 204–217. doi: 10.1037/0003-066X.61.3.204

McAdams, D. P., Reynolds, J., Lewis, M., Patten, A. H., & Bowman, P. J. (2001). When bad things turn good and good things turn bad: Sequences of redemption and contamination in life narrative and their relation to psychosocial adaptation in midlife adults and in students. *Personality and Social Psychology Bulletin*, *27*, 474–485. doi: 10.1177/0146167201274008

McCrae, R. R. (2003). Expansion, integration, and omission: Some thoughts on a new agenda. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *58*, P307-P308. doi: 10.1093/geronb/58.6.P307

McCrae, R. R. (2014). A more nuanced view of reliability: Specificity in the trait hierarchy. *Personality and Social Psychology Review*. Advance online publication. doi: 10.1177/1088868314541857

McCrae, R. R., & Costa, P. T. Jr., (1999). The Five-Factor Theory of personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (pp. 139–153). New York: Guilford Press.

McCrae, R. R., Kurtz J. E., Yamagata, E., & Terracciano, A. (2011). Internal consistency, retest reliability, and their implications for personality scale validity. *Personality and Social Psychology Review*, *15*, 28–50. doi: 10.1177/1088868310366253

McGinnis, D., & Roberts, P. (1996). Qualitative characteristics of vivid memories attributed to real and imagined experiences. *The American Journal of Psychology*, *109*, 59–77. doi: 10.2307/1422927

McLean, K. C. (2008). Stories of the young and the old: Personal continuity and narrative identity. *Developmental Psychology*, *44*, 254–264. doi: 10.1037/0012-1649.44.1.254

Montebarocci, O., Luchetti, M., & Sutin, A. R. (2014). Age, memory type, and the phenomenology of autobiographical memory: Findings from an Italian sample. *Memory*. *22*, 295–306. doi: 10.1080/09658211.2013.786093

Moradi, A. R., Moshirpanahi, S., Parhon, H., Mirzaei, J., Dalgleish, T., & Jobson, L. (2014). A pilot randomized controlled trial investigating the efficacy of MEmory Specificity

Training in improving symptoms of posttraumatic stress disorder. *Behavior Research and Therapy, 56*, 68–74. doi: 10.1016/j.brat.2014.03.002

Murray, J., Ehlers, A., & Mayou, R. A. (2002). Dissociation and post-traumatic stress disorder: two prospective studies of road traffic accident survivors. *The British Journal of Psychiatry*, *180*, 363–368. doi: 10.1192/bjp.180.4.363

Nelson, K., & Fivush, R. (2004). The emergence of autobiographical memory: A social cultural developmental theory. *Psychological Review*, *111*, 486–511. doi: 10.1037/0033-295X.111.2.486

Newby, J. M., & Moulds, M. L. (2011a). Do intrusive memory characteristics predict depression at 6 months? *Memory, 19*, 538–546. doi: 10.1080/09658211.2011.590505

Newby, J. M., & Moulds, M. L. (2011b). Characteristics of intrusive memories in a community sample of depressed, recovered depressed and never-depressed individuals. *Behavior Research and Therapy*, *49*, 234–243. doi: 10.1016/j.brat.2011.01.003

Nigro, G., & Neisser, U. (1983). Point of view in personal memories. *Cognitive Psychology*, *5*, 467–482. doi: 10.1016/0010-0285(83)90016-6

Pasupathi, M. (2003). Emotion regulation during social remembering: Differences between emotions elicited during an event and emotions elicited when talking about it. *Memory*, *11*, 151–163. doi: 10.1080/741938212

Pasupathi, M., & Mansour, E. (2006). Adult age differences in autobiographical reasoning in narratives. *Developmental Psychology*, *42*, 798–808. doi: 10.1037/0012-1649.42.5.798

Pasupathi, M., Mansour, E., & Brubaker, J. (2007). Developing a life story: Constructing relations between self and experience in autobiographical narratives. *Human Development*, *50*, 85–110. doi: 10.1159/000100939

Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science, 8,* 162–166. doi: 10.1111/j.1467-9280.1997.tb00403.x

Piolino, P., Coste, C., Martinelli, P., Macé, A. L., Quinette, P., Guillery-Girard, B., & Belleville, S. (2010). Reduced specificity of autobiographical memory and aging: Do the executive and feature binding functions of working memory have a role? *Neuropsychologia*, *48*, 429–440. doi: 10.1016/j.neuropsychologia.2009.09.035

Piolino, P., Desgranges, B., Benali, K., & Eustache, F. (2002). Episodic and semantic remote autobiographical memory in aging. *Memory*, *10*, 239–257. doi: 10.1080%2F09658210143000353

Piolino, P., Desgranges, B., Clarys, D., Guillery-Girard, B., Taconnat, L., Isingrini, M., & Eustache, F. (2006). Autobiographical memory, autonoetic consciousness, and self-perspective in aging. *Psychology and Aging*, *21*, 510–525. doi: 10.1037/0882-7974.21.3.510

Piolino, P., Desgranges, B., & Eustache, F. (2009). Episodic autobiographical memories over the course of time: cognitive, neuropsychological and neuroimaging findings. *Neuropsychologia*, *47*, 2314–2329. doi: 10.1016/j.neuropsychologia.2009.01.020

Philippe, F.L., Koestner, R., Beaulieu-Pelletier, G, & Lecours, S. (2011). The role of need satisfaction as a distinct and basic psychological component of autobiographical memories: A look at well-Being. *Journal of Personality*, *79*, 905–938. doi: 10.1111/j.1467-6494.2010.00710.x

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*, 879–891. doi: 10.3758/BRM.40.3.879

Prebble, S., Addis, D. R., & Tippett, L. J. (2013). Autobiographical memory and sense of self. *Psychological Bulletin, 139*, 815–840. doi: 10.1037/a0030146

Raes, F., Williams, J. M. G., & Hermans, D. (2009). Reducing cognitive vulnerability to depression: A preliminary investigation of MEmory Specificity Training (MEST) in inpatients with depressive symptomatology. *Journal of Behavior Therapy and Experimental Psychiatry, 40*, 24–38. doi: 10.1016/j.jbtep.2008.03.001

Ramírez, E., Ortega, A. R., Chamorro, A., & Colmenero, J. M. (2014). A program of positive intervention in the elderly: Memories, gratitude and forgiveness. *Aging and Mental Health, 18*, 463–470. doi: 10.1080/13607863.2013.856858

Ramsey, M. A., & Gentzler, A. L. (2014). Age differences in subjective well-being across adulthood: The roles of savoring and future time perspective. *The International Journal of Aging and Human Development, 78*, 3–22. doi: 10.2190/AG.78.1.b

Rasmussen, A. S., & Berntsen, D. (2010). Personality traits and autobiographical memory: Openness is positively related to the experience and usage of recollections. *Memory, 18*, 774–786. doi: 10.1080/09658211.2010.514270

Rathbone, C. J., & Moulin, C. J. A. (2014). Measuring autobiographical fluency in the self-memory system. *The Quarterly Journal of Experimental Psychology, 67*, 1661–1667. doi: 10.1080/17470218.2014.913069

Reese, E., Haden, C. A., Baker-Ward, L., Bauer, P., Fivush, R., & Ornstein, P. A. (2011). Coherence of personal narratives across the lifespan: A multidimensional model and coding method. *Journal of Cognition and Development, 12*, 424–462. doi: 10.1080/15248372.2011.587854

Reid, T., & Startup, M. (2010). Autobiographical memory specificity in borderline personality disorder: Associations with co-morbid depression and intellectual ability. *British Journal of Clinical Psychology, 49*, 413–420. doi: 10.1348/014466510X487059

Reisberg, D., Heuer, F., McLean, J., & O' Shaughnessy, M. (1988). The quantity, not the quality, of affect predicts memory vividness. *Bulletin of the Psychonomic Society, 26*, 100-103. doi: 10.3758/BF03334873

Rice, H. J. (2010). Seeing where we're at: A review of visual perspective and memory retrieval. In Mace J. H. (Ed.), *The act of remembering: Toward an understanding of how we recall the past.* Wiley-Blackwell.

Rice, H. J. & Rubin, D. C. (2009). I can see it both ways: First- and third-person visual perspectives at retrieval. *Consciousness and Cognition, 18,* 877–890. doi: 10.1016/j.concog.2009.07.004

Robinson J. A., & Swanson, K. L. (1993). Field and observer modes of remembering. *Memory, 1*, 169–184. doi: 10.1080/09658219308258230

Ros, L., Latorre, J. M., & Serrano, J. P. (2009). Working memory capacity and overgeneral autobiographical memory in young and older adults. *Aging, Neuropsychology, and Cognition*, 17, 89-107. doi: 10.1080/13825580903042650

Rubin, D. C. (2011). The coherence of memories for trauma: Evidence from posttraumatic stress disorder. *Consciousness and Cognition, 20*, 857–865. doi: 10.1016/j.concog.2010.03.018

Rubin, D. C., & Berntsen, D. (2003). Life scripts help to maintain autobiographical memories of highly positive, but not highly negative, events. *Memory & Cognition, 31*, 1–14. doi: 10.3758/BF03196077

Rubin, D. C., & Berntsen, D. (2009). The frequency of voluntary and involuntary autobiographical memories across the lifespan. *Memory & Cognition, 37,* 679–688. doi: 10.3758/37.5.679

Rubin, D. C., Berntsen, D., & Hutson, M. (2009). The normative and the personal life: Individual differences in life scripts and life story events among USA and Danish undergraduates. *Memory, 17,* 54–68. doi: 10.1080/09658210802541442

Rubin, D.C., Boals, A., & Berntsen, D. (2008). Memory in Posttraumatic Stress Disorder: Properties of voluntary and involuntary, traumatic and non-traumatic autobiographical memories in people with and without PTSD symptoms. *Journal of Experimental Psychology: General, 137,* 591–614. doi: 10.1037/a0013165

Rubin, D. C., Boals, A., & Klein, K. (2010). Autobiographical memories for very negative events: The effects of thinking about and rating memories. *Cognitive Therapy and Research,* 34, 35–48. doi: 10.1007/s10608-008-9226-6

Rubin, D. C., Dennis, M. F., & Beckham, J. C. (2011). Autobiographical memory for stressful events: The role of autobiographical memory in posttraumatic stress disorder. *Consciousness and Cognition, 20,* 840–856. doi: 10.1016/j.concog.2011.03.015

Rubin, D. C., Rahhal, T. A., & Poon, L. W. (1998). Things learned in early adulthood are remembered best. *Memory & Cognition, 26,* 3–19. doi: 10.3758/BF03211366

Rubin, D. C., Schrauf, R. W., & Greenberg, D. L. (2003). Belief and recollection of autobiographical memories. *Memory and Cognition, 31,* 887–901. doi: 10.3758/BF03196443

Rubin, D. C., Schrauf, R. W., & Greenberg, D. L. (2004). Stability in autobiographical memories. *Memory, 12*, 715–721. doi: 10.1080/09658210344000512

Rubin, D. C., & Schulkind, M. D. (1997). Distribution of important and word-cued autobiographical memories in 20-, 35-, and 70- year-old adults. *Psychology and Aging*, *12*, 524–535. doi: 10.1037/0882-7974.12.3.524

Rubin, D. C., & Siegler, I. C. (2004). Facets of personality and the phenomenology of autobiographical memory. *Applied Cognitive Psychology*, *18*, 913–930. doi: 10.1002/acp.1038

Scherman, A. Z. (2013). Cultural life script theory and the reminiscence bump: A reanalysis of seven studies across cultures. *Nordic Psychology*, *65*, 103–119. doi: 10.1080/19012276.2013.807667

Schryer, E., & Ross, M. (2012). Evaluating the valence of remembered events: The importance of age and self-relevance. *Psychology and Aging*, *27*, 237–242. doi: 10.1037/a0023283

Scott, J., Stanton, B., Garland, A., & Ferrier, I. N. (2000). Cognitive vulnerability in patients with bipolar disorder. *Psychological Medicine*, *30*, 467–472. doi: 10.1017/S0033291799008879

Sekiguchi, T., & Nonaka, S. (2014). The long-term effect of perspective change on the emotional intensity of autobiographical memories. *Cognition & Emotion*, *28*, 375–383. 10.1080/02699931.2013.825233

Serrano, J. P., Latorre, J. M., Gatz, M., & Montanes, J. (2004). Life review therapy using autobiographical retrieval practice for older adults with depressive symptomatology. *Psychology and Aging*, *19*, 272–277. doi: 10.1037/0882-7974.19.2.272

Shum, M. S. (1998). The role of temporal landmarks in autobiographical memory processes. *Psychological Bulletin, 124*, 423–442. doi: 10.1037/0033-2909.124.3.423

Siedlecki, K. L. (2015). Visual perspective in autobiographical memories: Reliability, consistency, and relationship to objective memory performance. *Memory, 23*, 306–316. doi: 10.1080/09658211.2014.885054

Singer, J. A. (2004). A love story: Using self-defining memories in couples therapy. In R. Josselson, D. P. McAdams, R. Josselson, & A. Lieblich (Eds.), *Healing plots: Narrative and psychotherapy* (pp. 189–208). Washington DC: American Psychological Association.

Singer, J. A., Blagov, P., Berry, M., & Oost, K. M. (2013). Self-defining memories, scripts, and the life story: Narrative identity in personality and psychotherapy. *Journal of Personality, 81*, 569–582. doi: 10.1111/jopy.12005

Singer, J. A., & Bonalume, L. (2010). Autobiographical memory narratives in psychotherapy: A coding system applied to the case of Cynthia. *Pragmatic Case Studies in Psychotherapy, 6*, 134–188.

Singer, J. A., & Conway, M. A. (2011). Reconsidering therapeutic action: Loewald, cognitive neuroscience and the integration of memory's duality. *The International Journal of Psychoanalysis, 92*, 1183–1207. doi: 10.1111/j.1745-8315.2011.00415.x

Singer, J. A., & Moffitt, K. M. (1991–1992). An experimental investigation of specificity and generality in memory narratives. *Imagination, Cognition, and Personality, 11*, 235–258. doi: 10.2190/72A3-8UPY-GDB9-GX9K

Singer, J. A., Rexhaj, B., & Baddeley, J. (2007). Older, wiser, and happier? Comparing older adults' and college students' self-defining memories. *Memory, 15*, 886–898. doi: 10.1080/09658210701754351

Singer, J. A., & Salovey, P. (1993). *The remembered self*. New York: The Free Press.

Sloan, D. M., & Marx, B. P. (2004). Taking pen to hand: Evaluating theories underlying the written disclosure paradigm. *Clinical Psychology: Science and Practice*, *11*, 121–137. doi: 10.1093/clipsy/bph062

Söderlund, H., Moscovitch, M., Kumar, N., Daskalakis, Z. J., Flint, A., Herrmann, N., & Levine, B. (2014). Autobiographical episodic memory in major depressive disorder. *Journal of abnormal psychology*, *123*, 51–60. doi: 10.1037/a0035610

Spitzer, R. L., Kroenke, K., Williams, J. B. W., and the Patient Health Questionnaire Study Group (1999). Validity and utility of a self-report version of PRIME-MD: the PHQ Primary Care Study. *The Journal of the American Medical Association*, *282*, 1737–1744. doi: 10.1001/jama.282.18.1737

Steel, P., Schmidt, J., & Shultz, J. (2008). Refining the relationship between personality and subjective well-being. *Psychological Bulletin*, *134*, 138–161. doi: 10.1037/0033-2909.134.1.138

St. Jacques, P. L., & Levine, B. (2007). Ageing and autobiographical memory for emotional and neutral events. *Memory*, *15*, 129–144. doi: 10.1080/09658210601119762

Suengas, A. G., & Johnson, M. K. (1988). Qualitative effects of rehearsal on memories for perceived and imagined complex events. *Journal of Experimental Psychology: General*, *117*, 377–389. doi: 10.1037/0096-3445.117.4.377

Sumner, J. A. (2012). The mechanisms underlying overgeneral autobiographicalmemory: An evaluative review of evidence for the CaR-FA-X model. *Clinical Psychology Review*, *32*, 34–48. doi: 10.1016/j.cpr.2011.10.003

Sumner, J. A., Griffith, J. W., & Mineka, S. (2010). Overgeneral autobiographical memory as a predictor of the course of depression: A meta-analysis. *Behaviour Research and Therapy*, *48*, 614–625. doi: 10.1016/j.brat.2010.03.013

Sumner, J. A., Mineka, S., & McAdams, D. P. (2013). Specificity in autobiographical memory narratives correlates with performance on the Autobiographical Memory Test and prospectively predicts depressive symptoms. *Memory*, *21*, 646–656. doi: 10.1080/09658211.2012.746372

Sutherland, K., & Bryant, R. A. (2005). Self-defining memories in post-traumatic stress disorder. *British Journal of Clinical Psychology*, *44*, 591–598. doi: 10.1348/014466505X64081

Sutin, A. R. (2008). Autobiographical memory as a dynamic process: Autobiographical memory mediates basic tendencies and characteristic adaptations. *Journal of Research in Personality*, *42*, 1060–1066. doi: 10.1016/j.jrp.2007.10.002

Sutin, A. R., Costa Jr, P. T., Wethington, E., & Eaton, W. (2010). Turning points and lessons learned: Stressful life events and personality trait development across middle adulthood. *Psychology and Aging*, *25*, 524–533. doi: 10.1037/a0018751

Sutin, A. R., & Gillath, O. (2009). Autobiographical memory phenomenology and content mediate attachment style and psychological distress. *Journal of Counseling Psychology*, *56*, 351–364. doi: 10.1037/a0014917

Sutin, A. R., & Robins, R. W. (2005). Continuity and correlates of emotions and motives in self-defining memories. *Journal of Personality*, *73*, 793–824. doi: 10.1111/j.1467-6494.2005.00329.x

Sutin, A. R., & Robins, R. W. (2007). The phenomenology of autobiographical memory: The Memory Experiences Questionnaire. *Memory, 15,* 390–411. doi: 10.1080/09658210701256654

Sutin, A. R., & Robins, R. W. (2008a). When the ‘‘I’’ looks at the ‘‘Me’’: Autobiographical memory, visual perspective, and the self. *Consciousness and Cognition*, *17*, 1386–1397. doi: 10.1016/j.concog.2008.09.001

Sutin, A. R., & Robins, R. W. (2008b). Going forward by drawing from the past: Personal strivings, personally meaningful memories, and personality traits. *Journal of Personality*, *76*, 631–664. doi: 10.1111/j.1467-6494.2008.00499.x

Sutin, A. R., & Robins, R. W. (2010). Correlates and phenomenology of first and third person memories. *Memory*, *18*, 625–637. doi: 10.1080/09658211.2010.497765

Sutin, A. R., & Stockdale, G. D. (2011). Trait Dissociation and the Subjective Affective, Motivational, and Phenomenological Experience of Self-Defining Memories. *Journal of Personality*, *79*, 939–964. doi: 10.1111/j.1467-6494.2010.00708.x

Sutin, A. R., Terracciano, A., Milaneschi, Y., An, Y., Ferrucci, L., & Zonderman, A. B. (2013). The trajectory of depressive symptoms across the adult life span. *The Journal of the American Medical Association – Psychiatry*, *70*, 803–811. doi: 10.1001/jamapsychiatry.2013.193

Talarico, J.M., LaBar, K. S., & Rubin, D. C. (2004). Emotional intensity predicts autobiographical memory experience. *Memory & Cognition*, *32*, 1118–1132. doi: 10.3758/BF03196886

Talarico, J. M., & Rubin, D. C. (2007). Flashbulb memories are special after all; in phenomenology, not accuracy. *Applied Cognitive Psychology, 21*, 557–578. doi: 10.1002/acp.1293

Thomsen, D. K., Hammershøj Olesen, M., Schnieber, A., Jensen, T., & Tønnesvang, J. (2012). What characterizes life story memories? A diary study of Freshmen's first term. *Consciousness and Cognition, 21*, 366–382. doi: 10.1016/j.concog.2012.01.006

Thomsen, D. K., Hammershøj Olesen, M. H., Schnieber, A., & Tønnesvang, J. (2014). The emotional content of life stories: Positivity bias and relation to personality. *Cognition and Emotion, 28*, 260–277. doi: 10.1080/02699931.2013.815155

Thorne, A., Cutting, L., & Skaw, D. (1998). Young adults' relationship memories and the life story: Examples or essential landmarks? *Narrative Inquiry, 8*, 237–268. doi: 10.1075/ni.8.2.02tho

Thorne, A., McLean, K. C., & Lawrence, A. M. (2004). When remembering is not enough: Reflecting on self-defining memories in late adolescence. *Journal of Personality, 72*(3), 513–542. doi: 10.1111/j.0022-3506.2004.00271.x

Tomkins, S. S. (1979). Script theory: Differential magnification of affects. *Nebraska Symposium on Motivation, 26*, 201–236.

Tulving, E. (2002). Episodic memory: From mind to brain. *Annual Review of Psychology, 53*, 1–25. doi: 10.1146/annurev.psych.53.100901.135114

Van Daele, T., Griffith, J. W., Van den Bergh, O., & Hermans, D. (2014). Overgeneral autobiographical memory predicts changes in depression in a community sample. *Cognition & Emotion, 28*, 1303–1312. doi: 10.1080/02699931.2013.879052

Verhaeghen, P., & Salthouse, T. A. (1997). Meta-analyses of age-cognition relations in adulthood: Estimates of linear and non-linear age effects and structural models. *Psychological Bulletin*, *122*, 231–249. doi: 10.1037/0033-2909.122.3.231

Wagenaar, W. A. (1986). My memory: A study of autobiographical memory over six years. *Cognitive Psychology*, *18*, 225–252. doi: 10.1016/0010-0285(86)90013-7

Walker, W. R., & Skowronski, J. J. (2009). The fading affect bias: But what the hell is it for? *Applied Cognitive Psychology*, *23*, 1122–1136. doi: 10.1002/acp.1614

Walker, W. R., Skowronski, J. J., & Thompson, C. P. (2003). Life is pleasant - and memory helps to keep it that way! *Review of General Psychology*, *7*, 203–210. doi: 10.1037/1089-2680.7.2.203

Wang, Q. (2003). Infantile amnesia reconsidered: A cross-cultural analysis. *Memory*, *11*, 65–80. doi: 10.1080/741938173

Warren, Z., & Haslam, C. (2007). Overgeneral memory for public and autobiographical events in depression and schizophrenia. *Cognitive Neuropsychiatry*, *12*, 301–321. doi: 10.1080/13546800601066142

Waters, T. E., Bohanek, J. G., Marin, K., & Fivush, R. (2013). Null's the word: A comparison of memory quality for intensely negative and positive events. *Memory*, *21*, 633–645. doi: 10.1080/09658211.2012.745877

Waters, T. E., & Fivush, R. (2014). Relations between narrative coherence, identity, and psychological well-being in emerging adulthood. *Journal of Personality*. Advance online publication. doi: 10.1111/jopy.12120

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070. doi: 10.1037/0022-3514.54.6.1063

Weinberger, D. A., Schwartz, G. E., & Davidson, R. J. (1979). Low-anxious, high-anxious, and repressive coping styles: Psychometric patterns and behavioral and physiological responses to stress. *Journal of Abnormal Psychology, 88,* 369–380. doi: 10.1037/0021-843X.88.4.369

Weiss, A., Sutin, A. R., Duberstein, P. R., Friedman, B., Bagby, R. M., & Costa, P. T. (2009). The personality domains and styles of the five-factor model are related to incident depression in Medicare recipients aged 65 to 100. *The American Journal of Geriatric Psychiatry, 17,* 591–601. doi: 10.1097/JGP.0b013e31819d859d

Werner-Seidler, A. & Moulds, M. L. (2011). Autobiographical memory characteristics in depression vulnerability: formerly depressed individuals recall less vivid positive memories. *Cognition & Emotion, 25,* 1087–1103. doi: 10.1080/02699931.2010.531007

Williams, J. M. G., Barnhofer, T., Crane, C., Herman, D., Raes, F., Watkins, E., & Dalgleish, T. (2007). Autobiographical memory specificity and emotional disorder. *Psychological Bulletin, 133,* 122–148. doi: 10.1037/0033-2909.133.1.122

Williams, J. M. G., & Broadbent, K. (1986). Autobiographical memory in suicide attempters. *Journal of Abnormal Psychology, 95,* 144–149. doi: 10.1037/0021-843X.95.2.144

Williams, J. M. G., Chan, S., Crane, C., Barnhofer, T., Eade, J., & Healy, H. (2006). Retrieval of autobiographical memories: The mechanisms and consequences of truncated search. *Cognition & Emotion, 20,* 351–382. doi: 10.1080/02699930500342522

Williams, J. M. G., Eelen, P. Raes, F., & Hermans, D., (2006). Reduced autobiographical memory specificity and affect regulation. *Cognition & Emotion*, *20*, 402–429. doi: 10.1080/02699930500341003

Williams, J. M. G., Ellis, N. C., Tyers, C., Healy, H., Rose, G., & MacLeod, A. K. (1996). The specificity of autobiographical memory and imageability of the future. *Memory & Cognition*, *24*, 116–125. doi: 10.3758/BF03197278

Wilson, A. E., & Ross, M. (2003). The identity function of autobiographical memory: Time is on our side. *Memory*, *11*, 137–149. doi: 10.1080/741938210

Witheridge, K.S., Cabral, C.M., & Rector, N. A. (2010). Examining autobiographical memory content in patients with depression and anxiety disorders. *Cognitive Behavior Therapy*, *39*, 302–310. doi: 10.1080/16506073.2010.520730

Woike, B. A., Gersekovich, I., Piorkowski, R., & Polo, M. (1999). The roles of motives in the content and structure of autobiographical memory. J*ournal of Personality and Social Psychology*, 76, 600–612. doi: 10.1037/0022-3514.76.4.600

Wood, W. J., & Conway, M. (2006). Subjective impact, meaning making, and current and recalled emotions for self-defining memories. *Journal of Personality*, *74*, 811–845. doi: 10.1111/j.1467-6494.2006.00393.x

APPENDIX A

Memory Requests

Turning Point [**ENGLISH] –** 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. Please describe what happened, where and when, who was involved, and what you were thinking and feeling.

Turning Point [**ITALIAN] –** Guardando indietro nel corso della tua vita, è possibile identificare alcuni momenti chiave che rappresentano dei "punti di svolta" – episodi che hanno contrassegnato un cambiamento importante in te o nella tua storia di vita. Per favore identifica un episodio particolare che vedi ad oggi come un "punto di svolta" nella tua vita. Se non riesci ad identificare un punto di svolta che spicca chiaramente, descrivi per favore un evento in cui hai affrontato un cambiamento importante di qualche tipo. Descrivi cosa avvenne, dove e quando, con chi ti trovavi, cosa pensavi e come ti sentivi in quel momento.

Childhood Memory [**ENGLISH] –** Think about an event from your early childhood that stands out in some way. Please describe this event in detail. What happened, where and when, who was involved, and what were you thinking and feeling?

Childhood Memory [ITALIAN] – Pensa ad un evento per te particolarmente importante che risale alla tua infanzia. Descrivi per favore il ricordo in dettaglio. Cosa avvenne, dove e quando, con chi ti trovavi, cosa pensavi e come ti sentivi in quel momento?

Memory Requests used in Study 1 were adapted from the 'key scenes' instructions of the Life Story Interview (McAdams, 2008). The Italian version of these requests was obtained using the standard translation/back-translation method and used in Study 2.

Memory Experiences Questionnaires (MEQ)
English Version

VIVIDNESS

1. My memory for this event is clear
2. My memory for this event is very vivid *
3. My memory for this event is very detailed *
4. My memory for this event is dim (R) *
5. My memory for this event is very vague (R)
6. My memory for this event is sketchy (R)

COHERENCE

1. The order of events in the memory is clear *
2. When I recall this memory, the sequence of events seems realistic
3. This memory is of an event that occurred once at a particular time and place, not a summary or merging of many similar or related events *
4. I recognize the setting in which my memory takes place
5. The order of events in the memory is confusing (R)
6. This memory comes back to me in bits and pieces, not as a logical, coherent story (R) *
7. This memory is a blending of many similar, related events rather than a specific memory about a particular event (R) *
8. I have a difficult time remembering the event in a coherent manner (R)

ACCESSIBILITY

1. This memory just sprang to my mind when I read the instructions
2. This memory was easy for me to recall *
3. It was difficult for me to think of this memory (R) *
4. I had to think for a while before I could recall this event (R) *
5. I really had to search my ‘‘memory bank’’ for this experience (R)

SENSORY DETAILS

1. As I remember the event, I can hear it in my mind *
2. As I remember the event, I can feel now the emotions that I felt then
3. I can bodily ‘‘feel’’ myself in this memory
4. When I recall this event, I think the same things I thought when the event originally happened *
5. When I recall this memory, I do not feel the same feelings I felt when the event originally happened (R)
6. When I recall this event, it does not really feel like I am reliving the experience (R)
7. My memory for this event does not involve a lot of sensory information (sounds, smells, tastes, etc.) (R) *
8. As I remember the event, I have a difficult time recalling the particular physical reactions and sensations I had during the experience (R) *

EMOTIONAL INTENSITY

1. As I am remembering the experience now, my feelings are very intense
2. My emotions are very intense concerning this event *
3. The memory of this event evokes powerful emotions *

4. I do not remember having particularly strong emotions at the time of this event (R)
5. I do not have strong emotions about this memory (R)
6. This memory does not evoke strong emotions in me (R) *

VISUAL PERSPECTIVE

1. I see the experience in the memory through my own eyes
2. In my memory, I see this experience through my own eyes *
3. When I visualize this memory, I clearly see this event from my own perspective
4. I view this memory as if I was an observer to the experience (R) *
5. In my memory, I see this experience through the eyes of others (R)
6. As I remember this event, I feel like an observer watching myself (R) *

TIME PERSPECTIVE

1. My memory for the year when the event took place is clear
2. My memory for the day when the event took place is clear *
3. My memory for the hour when the event took place is clear *
4. My memory for the year when the event took place is vague (R) *
5. My memory for the day when the event took place is vague (R)
6. My memory for the hour when the event took place is vague (R)

SHARING

1. I often share this memory with friends or family
2. Since it happened, I have talked about this event many times *
3. I frequently think about or talk about this event with others *
4. I rarely tell others about this memory (R) *
5. I do not feel the need to share this memory with others (R)
6. I do not think about this memory often (R)

DISTANCING

1. I don’t have much in common with the person in the memory
2. I feel like the person in this memory is a different person than who I am today *
3. When I recall this memory, I think, ‘‘that’s not me anymore’’ *
4. My behavior in this memory is consistent with my personality (R)
5. I feel like I am the same person in the memory as I am today (R) *
6. This memory is consistent with who I think I am today (R)

VALENCE

1. The overall tone of the memory is positive *
2. The experience described in this memory is positive
3. My feelings at the time were positive
4. The overall tone of the memory is negative (R) *
5. The experience described in this memory is negative (R)
6. My feelings at the time were negative (R)

(R) = Reverse-scored item
* Included in the short-form of MEQ

Memory Experiences Questionnaires (MEQ)
Italian Version

VIVIDEZZA

1. Il mio ricordo di questo evento è chiaro
2. Il mio ricordo di questo evento è molto vivido *
3. Il mio ricordo di questo evento è molto dettagliato *
4. Il mio ricordo di questo evento è offuscato (R) *
5. ll mio ricordo di questo evento è molto vago (R)
6. ll mio ricordo di questo evento è approssimativo (R)

COERENZA

1. L'ordine degli eventi nel ricordo è chiaro *
2. Quando richiamo alla mente questo ricordo, la sequenza degli eventi sembra realistica
3. Questo ricordo è di un evento che accadde in un preciso momento e luogo, non un insieme sommario di molti eventi simili o collegati *
4. Riconosco il contesto nel quale si svolse l'evento
5. Nel ricordo l'ordine degli eventi è confuso (R)
6. Questo ricordo mi sovviene in frammenti, non come una storia coerente e logica (R) *
7. Questo ricordo è una miscela di molti eventi simili e collegati piuttosto che un ricordo specifico di un particolare evento (R) *
8. Ho difficoltà nel ricordare l'evento in modo coerente (R)

ACCESSIBILITA'

1. Questo ricordo mi è venuto in mente appena ho letto le istruzioni
2. Mi è stato facile richiamare alla mente questo ricordo *
3. E' stato difficile per me pensare a questo ricordo (R) *
4. Ho dovuto pensarci un po' prima di riuscire a ricordare questo evento (R) *
5. Ho dovuto veramente cercare nei recessi della mia memoria per recuperare questa esperienza (R)

DETTAGLI SENSORIALI

1. Mentre ricordo questo evento, posso udirlo nella mia mente
2. Mentre ricordo questo evento, riesco a rivivere le emozioni che provai allora
3. Riesco a sentirmi in senso fisico in questo ricordo *
4. Quando richiamo alla mente questo evento, penso le stesse cose che pensai quando l'evento capitò originariamente *
5. Quando richiamo alla mente questo ricordo, non provo le stesse emozioni che provai quando accadde originariamente (R)
6. Quando richiamo alla mente questo evento, non è proprio come se stessi rivivendo la stessa esperienza (R)
7. Il mio ricordo di questo evento non include molte informazioni sensoriali (suoni, odori, sapori, ...) (R) *
8. Mentre ricordo l'evento, ho difficoltà nel richiamare le particolari reazioni e sensazioni fisiche provate durante l'esperienza (R) *

INTENSITA' EMOTIVA

1. Mentre ricordo l'esperienza adesso, le mie emozioni sono molto intense
2. Le mie emozioni riguardo questo evento sono molto intense *

3. Il ricordo di questo evento mi evoca emozioni forti *
4. Non mi ricordo di aver provato emozioni particolarmente intense al tempo dell'evento (R)
5. Non provo forti emozioni rispetto a questo ricordo (R)
6. Questo ricordo non evoca forti emozioni in me (R) *

PROSPETTIVA VISIVA

1. Vedo l'esperienza nel ricordo attraverso i miei stessi occhi
2. Nel ricordo, vedo questa esperienza attraverso i miei stessi occhi *
3. Quando visualizzo nella mia mente questo ricordo, vedo chiaramente questo evento dalla mia prospettiva
4. Vedo questo ricordo come se fossi un osservatore esterno dell'evento (R) *
5. Nel mio ricordo, rivedo l'esperienza come attraverso gli occhi di altre persone (R)
6. Mentre ricordo questo evento, mi sento come un osservatore esterno che osserva me stesso (R) *

PROSPETTIVA TEMPORALE

1. Ricordo chiaramente l'anno in cui si verificò questo evento
2. Ricordo chiaramente il giorno in cui si verificò questo evento *
3. Ricordo chiaramente l'ora in cui si verificò questo evento *
4. Ricordo solo vagamente in che anno si verificò l'evento (R) *
5. Ho un ricordo vago del giorno in cui si verificò l'evento (R)
6. Ho un ricordo vago dell'ora in cui si verificò l'evento (R)

CONDIVISIONE

1. Condivido spesso questo ricordo con amici o parenti
2. Da quando è accaduto, ho parlato di questo evento molte volte
3. Penso o parlo frequentemente di questo evento con gli altri *
4. Racconto raramente agli altri questo ricordo (R) *
5. Non sento il bisogno di condividere questo ricordo con gli altri (R)
6. Non penso spesso a questo ricordo (R)

DISTANZIAMENTO

1. Non ho molto in comune con la persona nel ricordo
2. Sento come se la persona nel ricordo fosse una persona diversa da quella che sono io oggi*
3. Quando richiamo alla mente questo ricordo, penso "non sono più quella persona" *
4. Il mio comportamento in questo ricordo è compatibile con la mia personalità (R)
5. Ad oggi, mi sento di essere la stessa persona che ero all'epoca del ricordo (R) *
6. Questo ricordo è compatibile con chi penso di essere oggi (R)

VALENZA

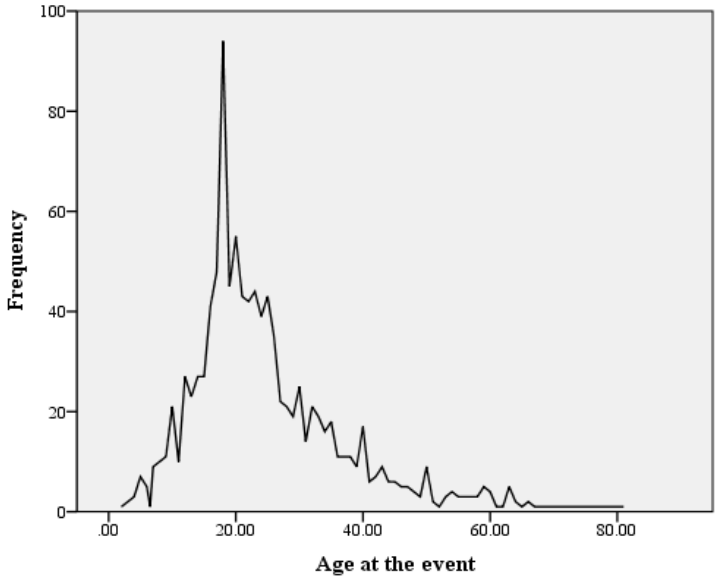
1. Il tono generale del ricordo è positivo *
2. L'esperienza descritta in questo ricordo è positiva
3. Le mie emozioni di allora erano positive
4. Il tono generale del ricordo è negativo (R) *
5. L'esperienza descritta nel ricordo è negativa (R)
5. Le mie emozioni a quel tempo erano negative (R)

(R) = Reverse-scored item
* Included in the short-form of MEQ

APPENDIX B

Supplementary Material of Study 1

(a) Turning Point Memory



(b) Childhood Memory

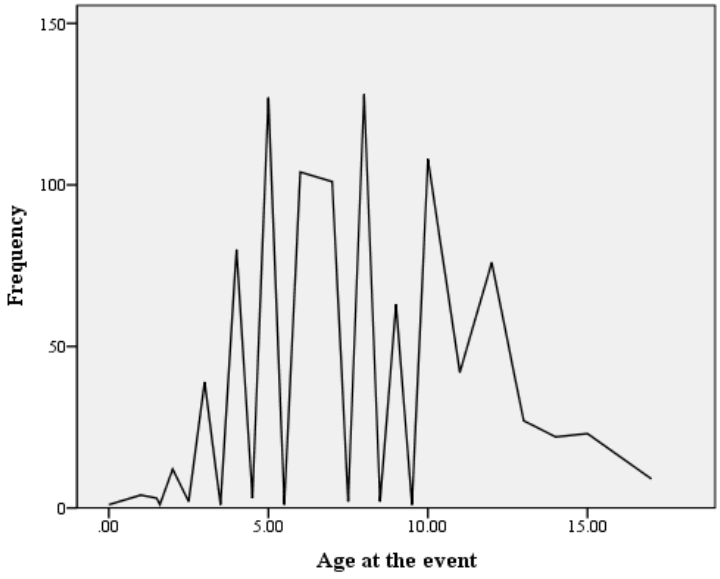


Figure S1: Age at the time of event. Section (a) refers to Turning Point events (N = 1,052), section (b) refers to Childhood events (N = 999).

Table S1 – Means, standard deviations, and intercorrelations among all variables for each age group

	M (SD)	N	C	PHQ-9	FS	LS	PA	NA	1	2	3	4	5	6	7	8	9	10
20-29 years																		
Neuroticism (N)	2.95(0.8)	.	-.45**	.47**	-.43**	-.43**	-.29**	.15*	-.18*	-.18*	-.18*	-.25**	.01	-.03	-.24**	-.14*	.18*	-.19**
Conscientiousness (C)	3.65(0.6)	-.45**	.	-.46**	.52**	.28**	.19**	-.10	.31**	.20**	.32**	.15*	.17*	.06	.26**	.01	-.04	.12
Depression (PHQ-9)	8.17(7.2)	.47**	-.46**	.	-.22**	-.11	-.13	.29**	-.34**	-.29**	-.36**	-.24**	-.10	-.22**	-.24**	-.09	.08	-.17*
Positive Functioning (FS)	3.96(0.8)	-.43**	.52**	-.22**	.	.65**	.35**	-.08	.35**	.15*	.18*	.30**	.24**	.02	.28**	.16*	.00	.18*
Life Satisfaction (LS)	3.79(1.1)	-.43**	.28**	-.11	.65**	.	.32**	.03	.18*	.01	-.03	.23**	.10	-.04	.19**	.18*	-.04	.13
Positive Affect (PA)	3.16(1.3)/2.54(1.3)	-.17*	.04	.04	.14	.09	.	-.24**	.24**	.09	.22**	.25**	.01	.08	.36**	.41**	-.19**	.71**
Negative Affect (NA)	2.24(1.0)/2.10(1.1)	.11	-.16*	.31**	-.14	.07	-.24**	.	-.17*	-.21**	-.36**	-.06	.15*	-.21**	-.23**	-.19**	.23**	-.47**
1. Vividness	3.88(0.8)/3.55(0.9)	-.07	.22**	-.10	.19*	.13	.09	.08	.	.43**	.47**	.53**	.33**	.30**	.62**	.22**	-.09	.21**
2. Coherence	3.56(0.8)/3.57(0.9)	-.07	.28**	-.21**	.20**	.07	-.18*	-.13	.47**	.	.49**	.35**	.25**	.31**	.44**	-.01	-.04	.11
3. Accessibility	3.96(0.9)/3.80(0.9)	.00	.25**	-.25**	.16*	.01	-.04	-.25**	.52**	.51**	.	.30**	.22**	.32**	.51**	.23**	-.09	.42**
4. Sensory Details	3.44(0.7)/3.20(0.7)	-.07	.09	-.06	.19*	.15*	.12	.05	.58**	.37**	.40**	.	.38**	.16*	.56**	.22**	-.12	.19**
5. Emotional Intensity	3.68(0.9)/3.21(1.0)	.13	.12	.06	.05	-.01	.13	.25**	.42**	.18*	.11	.42**	.	.09	.35**	-.06	.11	-.06
6. Visual Perspective	3.31(0.9)/3.13(0.9)	.13	.10	-.08	-.09	-.13	-.15*	-.07	.21**	.24**	.18*	.15*	.13	.	.22**	-.01	-.11	.21**
7. Time Perspective	3.71(0.9)/3.20(0.9)	-.10	.12	.01	.10	.11	.18*	.14	.55**	.24**	.27**	.58**	.36**	.01	.	.19**	-.08	.31**
8. Sharing	3.08(1.1)/2.69(1.0)	-.14	-.05	-.00	.13	.13	.30**	.06	.24**	-.09	.00	.23**	.12	-.23**	.21**	.	-.21**	.41**
9. Distancing	3.31(1.0)/3.30(1.0)	.20**	.03	.11	-.02	-.13	-.22**	.11	-.11	-.09	-.08	-.16*	.01	.04	-.09	-.13	.	-.18*
10. Valence	3.46(1.3)/3.28(1.4)	-.16*	.03	-.19*	.10	-.02	.61**	-.61**	-.13	-.10	.09	.01	-.18*	-.04	-.01	.10	-.22**	.
30-39 years																		
Neuroticism (N)	2.87(0.8)	.	-.41**	.52**	-.45**	-.41**	-.39**	.39**	-.09	-.11	-.17*	-.14*	.04	-.03	-.14	.02	.11	-.30**
Conscientiousness (C)	3.77(0.6)	-.41**	.	-.44**	.41**	.16*	.09	-.24**	.34**	.31**	.41**	.33**	.26**	.06	.32**	.03	.03	.17*
Depression (PHQ-9)	7.96(7.5)	.52**	-.44**	.	-.17**	-.21**	-.15*	.40**	-.13	-.18*	-.30**	-.17*	.06	-.05	-.09	.10	.12	-.27**
Positive Functioning (FS)	3.98(0.7)	-.45**	.41**	-.17**	.	.63**	.36**	-.25**	.31**	.20**	.23**	.30**	.12	-.02	.31**	.10	-.04	.33**
Life Satisfaction (LS)	3.67(1.1)	-.41**	.16*	-.21**	.63**	.	.38**	-.25**	.07	.03	.14*	.19**	-.07	.06	.08	.13	-.22**	.30**
Positive Affect (PA)	3.07(1.4)/2.48(1.3)	-.18*	-.01	-.01	.16*	.16*	.	-.39**	.15*	.05	.13	.15*	-.14	-.02	.16*	.33**	-.31**	.73**
Negative Affect (NA)	2.25(1.1)/2.12(1.1)	.13	-.15*	.30**	-.04	.07	-.22**	.	-.02	-.10	-.26**	-.13	.23**	-.05	-.06	-.06	.23**	-.55**
1. Vividness	4.00(0.8)/3.38(0.9)	-.13	.31**	-.09	.25**	.13	.17*	-.01	.	.54**	.57**	.51**	.38**	.20**	.63**	.26**	.07	.14*
2. Coherence	3.70(0.9)/3.78(0.8)	-.13	.37**	-.22**	.22**	.04	-.13	-.16*	.53**	.	.45**	.42**	.25**	.13	.47**	.01	-.03	.13
3. Accessibility	4.05(0.8)/3.88(0.9)	-.22**	.42**	-.27**	.21**	.11	.08	-.26**	.50**	.54**	.	.43**	.26**	.24**	.51**	.21**	.01	.29**
4. Sensory Details	3.59(0.8)/3.46(0.9)	-.22**	.38**	-.17*	.32**	.11	.10	-.04	.62**	.39**	.40**	.	.45**	.13	.53**	.19**	.01	.16*
5. Emotional Intensity	3.94(1.0)/3.40(1.0)	-.09	.15*	.02	.23**	.04	.15*	.24**	.37**	.14	.07	.54**	.	.04	.41**	.14*	.21**	-.21**
6. Visual Perspective	3.29(1.0)/3.10(0.9)	-.02	.08	-.10	.02	.08	-.02	-.14	.06	.15*	.20**	.03	-.16*	.	.13	-.04	.00	-.05
7. Time Perspective	3.90(0.9)/3.34(1.1)	-.19**	.28**	-.14	.27**	.14	.27**	.04	.64**	.28**	.30**	.60**	.52**	-.04	.	.23**	.03	.20**
8. Sharing	3.11(1.1)/2.73(1.1)	-.13	.05	-.00	.07	.15*	.31**	-.08	.20**	.03	.19**	.10	.04	-.10	.21**	.	-.19**	.30**
9. Distancing	3.40(1.1)/3.28(1.1)	.19**	-.04	.11	-.08	-.15*	-.28**	.31**	-.02	-.03	-.15*	-.07	.08	-.14*	.01	-.13	.	-.33**
10. Valence	3.28(1.5)/3.09(1.4)	-.17*	.05	-.16*	.07	.11	.62**	-.53**	.12	.03	.27**	.05	-.06	.18*	.08	.21**	-.45**	.

(continue)

	M (SD)	N	C	PHQ-9	FS	LS	PA	NA	1	2	3	4	5	6	7	8	9	10
40-49 years																		
Neuroticism (N)	2.67(0.8)	.	-.46**	.49**	-.51**	-.50**	-.15*	.23**	-.16*	-.24**	-.31**	-.22**	-.07	-.04	-.16*	-.19**	.12	-.19**
Conscientiousness (C)	3.96(0.7)	-.46**	.	-.51**	.62**	.32**	.13	-.10	.34**	.26**	.32**	.44**	.17*	.02	.34**	.29**	-.07	.20**
Depression (PHQ-9)	5.65(6.3)	.49**	-.51**	.	-.44**	-.34**	-.14*	.16*	-.16*	-.14*	-.33**	-.26**	-.02	-.05	-.25**	-.26**	.16*	-.19**
Positive Functioning (FS)	3.99(0.7)	-.51**	.62**	-.44**	.	.65**	.28**	-.12	.32**	.21**	.32**	.38**	.19**	.02	.35**	.35**	-.15*	.28**
Life Satisfaction (LS)	3.54(1.2)	-.50**	.32**	-.34**	.65**	.	.28**	-.18**	.13	.03	.22**	.15*	.06	.03	.14*	.24**	-.13	.24**
Positive Affect (PA)	3.23(1.3)/2.40(1.3)	-.16*	.16*	-.13	.20**	.22**	.	-.41**	.22**	.02	.38**	.33**	.06	.04	.21**	.37**	-.30**	.64**
Negative Affect (NA)	2.01(1.0)/2.06(1.1)	.13	-.08	.22**	-.06	-.09	-.44**	.	-.01	-.05	-.29**	-.07	.26**	-.11	-.05	-.15*	.26**	-.53**
1. Vividness	4.20(0.8)/3.72(1.1)	-.18**	.34**	-.05	.17*	-.02	.20**	.12	.	.44**	.43**	.61**	.38**	.06	.60**	.31**	-.03	.13
2. Coherence	3.89(0.8)/3.81(0.8)	-.17*	.23**	-.02	.14*	-.01	-.05	.12	.42**	.	.29**	.30**	.21**	.13	.44**	.10	-.05	.10
3. Accessibility	4.30(0.8)/4.06(0.8)	-.28**	.23**	-.16*	.10	.04	.17*	-.25**	.44**	.35**	.	.42**	.16*	.19**	.36**	.28**	-.28**	.42**
4. Sensory Details	3.76(0.8)/3.43(0.8)	-.21**	.36**	-.14*	.25**	.10	.33**	.11	.65**	.28**	.26**	.	.41**	-.01	.64**	.34**	-.17*	.19**
5. Emotional Intensity	4.01(0.9)/3.46(0.8)	-.11	.24**	-.03	.18**	.05	.21**	.27**	.50**	.10	.12	.62**	.	-.03	.36**	.15*	.04	-.12
6. Visual Perspective	3.50(0.9)/3.20(1.1)	-.20**	.11	-.03	-.02	.05	-.08	-.13*	.14*	.19**	.19**	.10	-.04	.	.06	.03	-.01	.03
7. Time Perspective	3.99(0.9)/3.29(0.9)	-.19**	.36**	-.12	.22**	.06	.31**	.14*	.64**	.33**	.20**	.63**	.47**	.03	.	.36**	-.16*	.21**
8. Sharing	3.34(1.2)/2.60(1.1)	-.01	.09	-.03	.09	.07	.35**	-.13	.23**	.09	.22**	.19**	.06	.07	.27**	.	-.28**	.42**
9. Distancing	3.13(1.2)/3.27(1.1)	-.07	.04	.06	.02	-.11	-.25**	.18**	.03	-.02	-.07	-.06	-.04	-.09	.01	-.22**	.	-.35**
10. Valence	3.68(1.4)/3.19(1.5)	-.18**	.14*	-.23**	.11	.17*	.71**	-.64**	.02	-.06	.24**	.10	-.11	.07	.04	.31**	-.24**	.
50-59 years																		
Neuroticism (N)	2.58(0.8)	.	-.45**	.58**	-.49**	-.46**	-.23**	.26**	-.05	-.15*	-.13	-.08	.15*	.03	-.13	-.18**	.02	-.26**
Conscientiousness (C)	4.10(0.6)	-.45**	.	-.37**	.46**	.22**	.24**	-.30**	.28**	.26**	.30**	.22**	.06	.08	.34**	.24**	-.10	.22**
Depression (PHQ-9)	4.33(5.5)	.58**	-.37**	.	-.44**	-.44**	-.10	.34**	-.06	-.28**	-.11	-.04	.11	.02	-.08	-.12	-.04	-.29**
Positive Functioning (FS)	4.08(0.6)	-.49**	.46**	-.44**	.	.64**	.29**	-.11	.22**	.21**	.24**	.30**	.17*	-.06	.24**	.30**	-.04	.20**
Life Satisfaction (LS)	3.78(1.1)	-.46**	.22**	-.44**	.64**	.	.15*	-.05	.19**	.14*	.15*	.30**	.15*	-.07	.10	.26**	-.09	.15*
Positive Affect (PA)	3.17(1.4)/2.47(1.3)	-.18**	.08	-.14*	.16*	.09	.	-.39**	.18**	.10	.43**	.18**	.06	-.04	.27**	.41**	-.33**	.68**
Negative Affect (NA)	1.98(1.0)/2.11(1.1)	.20**	-.12	.30**	-.15*	-.16*	-.42**	.	.02	-.00	-.30**	.09	.27**	-.08	-.01	-.18**	.28**	-.53**
1. Vividness	4.18(0.8)/3.91(0.8)	-.08	.25**	-.05	.16*	-.01	.10	.06	.	.53**	.41**	.59**	.48**	.25**	.60**	.39**	-.21**	.07
2. Coherence	3.95(0.8)/3.95(0.8)	-.14*	.30**	-.21**	.12	-.01	-.08	-.01	.58**	.	.35**	.31**	.28**	.19**	.47**	.14*	-.04	.09
3. Accessibility	4.22(0.8)/4.15(0.8)	-.13	.29**	-.25**	.16*	.09	.19**	-.31**	.43**	.51**	.	.28**	.10	.25**	.35**	.33**	-.19**	.44**
4. Sensory Details	3.75(0.8)/3.47(0.7)	-.09	.29**	-.07	.16*	.04	.14*	.13	.56**	.34**	.36**	.	.52**	.05	.53**	.36**	-.19**	.05
5. Emotional Intensity	3.98(0.9)/3.40(1.1)	.14*	.06	.14*	-.00	-.09	.12	.30**	.43**	.12	.07	.51**	.	.08	.33**	.15*	-.06	-.18**
6. Visual Perspective	3.50(0.9)/3.37(0.9)	-.04	.17*	-.08	.01	-.03	-.07	-.02	.21**	.35**	.34**	.11	.00	.	.13*	-.05	-.09	.00
7. Time Perspective	4.01(1.0)/3.54(1.1)	-.15*	.25**	-.02	.16*	.00	.25**	-.01	.61**	.31**	.29**	.56**	.41**	.09	.	.34**	-.15*	.21**
8. Sharing	3.15(1.2)/3.58(1.1)	-.21**	.14*	-.07	.16*	.13	.26**	-.07	.16*	.06	.14*	.21**	.01	.02	.29**	.	-.31**	.35**
9. Distancing	3.10(1.1)/3.18(1.1)	.05	-.03	.02	.03	.03	-.28**	.17*	-.18**	-.20**	-.27**	-.17*	-.13	-.16*	-.14*	-.14*	.	-.33**
10. Valence	3.67(1.4)/3.28(1.4)	-.21**	.04	-.19**	.05	.12	.66**	-.65**	-.03	-.04	.28**	.02	-.19**	.01	.11	.23**	-.22**	.

(continue)

	M(SD)	N	C	PHQ-9	FS	LS	PA	NA	1	2	3	4	5	6	7	8	9	10
Over 60 years																		
Neuroticism (N)	2.37(0.8)	.	-.49**	.53**	-.54**	-.46**	-.22**	.29**	-.27**	-.11	-.28**	-.25**	-.04	-.05	-.21**	-.11	.00	-.24**
Conscientiousness (C)	4.16(0.6)	-.49**	.	-.45**	.58**	.44**	.13	-.18**	.25**	.33**	.39**	.26**	.14*	.12	.23**	.04	-.07	.13*
Depression (PHQ-9)	3.27(4.5)	.53**	-.45**	.	-.52**	-.47**	-.08	.18**	-.27**	-.12	-.24**	-.24**	-.07	-.06	-.15*	-.08	.02	-.20**
Positive Functioning (FS)	4.17(0.6)	-.54**	.58**	-.52**	.	.65**	.22**	-.25**	.25**	.21**	.26**	.23**	.14*	.10	.26**	.17*	.00	.24**
Life Satisfaction (LS)	3.98(1.0)	-.46**	.44**	-.47**	.65**	.	.18**	-.24**	.14*	.06	.16*	.16*	.04	-.04	.12	.14*	-.09	.16*
Positive Affect (PA)	3.23(1.3)/2.51(1.2)	-.11	.10	-.10	.13	.22**	.	-.55**	.14*	.02	.32**	.17*	.06	.00	.21**	.31**	-.27**	.67**
Negative Affect (NA)	1.94(1.0)/1.93(1.0)	.14*	-.07	.19**	-.14*	-.16*	-.48**	.	.01	.09	-.33**	-.03	.22**	-.08	-.07	-.20**	.17*	-.68**
1. Vividness	4.32(0.7)/3.86(0.9)	-.15*	.28**	-.19**	.23**	.13	.10	-.01	.	.48**	.46**	.65**	.50**	.16*	.71**	.28**	-.19**	.11
2. Coherence	4.00(0.8)/3.97(0.8)	-.09	.16*	-.08	.23**	.07	-.06	.03	.55**	.	.39**	.34**	.29**	.26**	.48**	.08	-.19**	.01
3. Accessibility	4.26(0.8)/4.07(0.8)	-.13	.34**	-.09	.24**	.13	.22**	-.23**	.53**	.39**	.	.36**	.11	.27**	.38**	.40**	-.22**	.42**
4. Sensory Details	3.71(0.8)/3.45(0.8)	-.12	.19**	-.17*	.18*	.11	.20**	.03	.60**	.29**	.41**	.	.55**	.05	.63**	.23**	-.35**	.20**
5. Emotional Intensity	3.95(1.0)/3.39(1.1)	.03	.08	-.06	.07	-.00	.11	.27**	.36**	.16*	.16*	.51**	.	.04	.40**	.17*	-.17*	-.05
6. Visual Perspective	3.53(0.9)/3.28(0.8)	.01	-.02	.06	.02	-.13	-.06	.02	.13	.06	.05	.13	.09	.	.15*	.18**	-.13*	.09
7. Time Perspective	4.11(0.9)/3.51(1.0)	-.14	.22**	-.12	.20**	.16*	.16*	.02	.67**	.39**	.46**	.53**	.32**	.04	.	.27**	-.27**	.13*
8. Sharing	3.14(1.2)/2.40(1.1)	-.13	.16*	-.16*	.19**	.19**	.31**	-.25**	.25**	.10	.28**	.22**	.03	.05	.26**	.	-.19**	.34**
9. Distancing	3.08(1.3)/3.08(1.1)	.04	-.05	.12	-.14	-.22**	-.25**	.16*	-.26**	-.22**	-.35**	-.34**	-.17*	-.03	-.28**	-.24**	.	-.31**
10. Valence	3.71(1.4)/3.49(1.4)	-.07	.01	-.13	.05	.09	.62**	-.69**	.10	-.03	.27**	.15*	-.08	-.05	.12	.32**	-.31**	.

Note. The sample comprised five age groups: 20-29 (*N* = 201), 30-39 (*N* = 199), 40-49 (*N* = 225), 50-59 (*N* = 229), and over 60 (*N* = 221). Correlations above the diagonal are for Turning Point Memory, whereas correlations below the diagonal are for Childhood Memory. Means and standard deviations on the left are for Turning Point and on the right for Childhood Memory.

* p<.05. ** p<.01.

APPENDIX C

Supplementary Material of Study 2

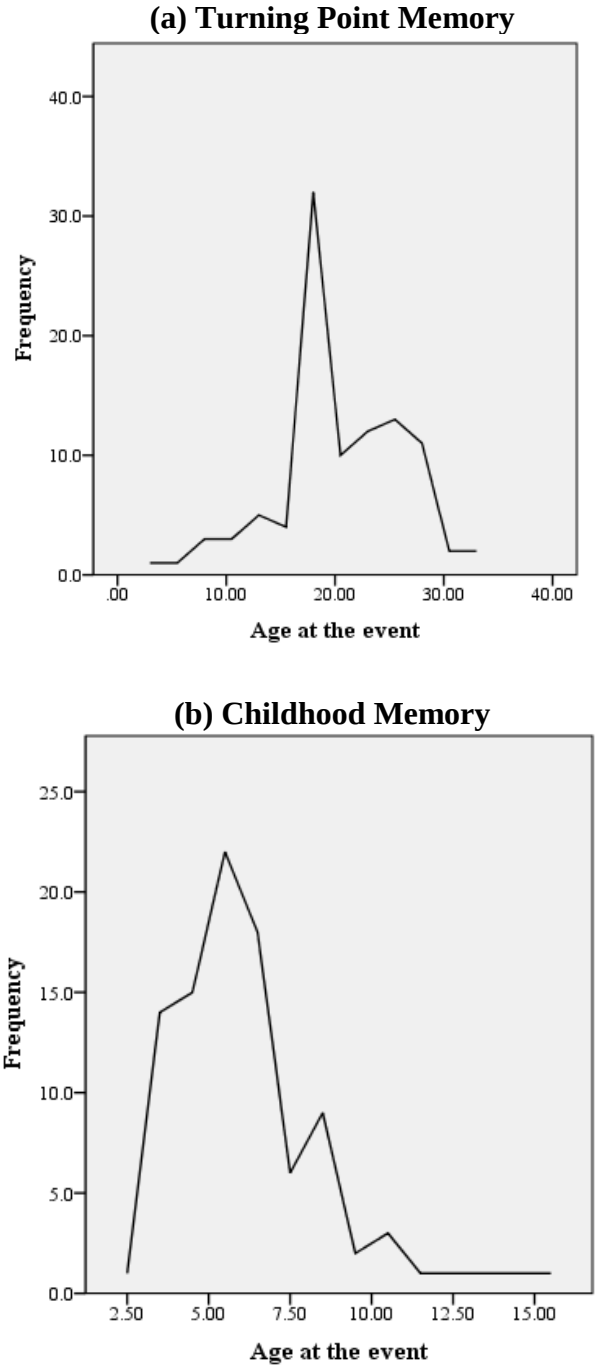


Figure S1: Age at the time of event. Section (a) refers to Turning Point events (N = 99), section (b) refers to Childhood events (N = 94).

Table S1 – Intercorrelations among all variables at Time 1 and Time 2

	N	C	PHQ-9	FS	LS	PA	NA	1	2	3	4	5	6	7	8	9	10	Age
Time 1intercorrelations																		
Neuroticism (N)	.	-.34**	.50**	-.39**	-.50**	-.22*	.23*	.04	.25*	-.10	.09	.16	-.01	.11	-.29**	.11	-.25*	-.07
Conscientiousness (C)	-.34**	.	-.42**	.37**	.37**	.36**	-.34**	.22*	.00	.11	.13	-.11	.05	.15	.36**	-.01	.32**	.11
Depression (PHQ-9)	.50**	-.42**	.	-.55**	-.63**	-.38**	.36**	-.07	.15	-.10	-.04	-.03	-.26**	-.18	-.49**	.06	-.34**	-.21*
Positive Functioning (FS)	-.39**	.37**	-.55**	.	.76**	.39**	-.36**	-.01	-.09	.23*	.08	-.02	.03	-.07	.32**	.02	.40**	.12
Life Satisfaction (LS)	-.49**	.37**	-.63**	.76**	.	.40**	-.41**	.05	-.09	.20*	.03	-.09	.13	.12	.34**	-.05	.47**	.13
Positive Affect (PA)	-.06	.14	-.09	-.01	.05	.	-.42**	.17	.03	.33**	.33**	.22*	.14	.01	.42**	-.27**	.73**	.27**
Negative Affect (NA)	-.02	.10	-.04	-.07	-.07	-.28**	.	.00	-.02	-.20*	-.02	.22*	-.03	-.03	-.26**	.11	-.64**	-.16
1. Vividness	-.17	.30**	-.18	.08	.08	.39**	.14	.	.51**	.39**	.51**	.37**	.25*	.55**	.35**	-.20	.06	.20*
2. Coherence	-.16	.21*	-.16	.12	.03	-.03	.26*	.62**	.	.31**	.26**	.23*	.02	.40**	-.08	-.24*	-.03	.22*
3. Accessibility	-.20	.08	-.12	.19	.14	.25*	-.08	.45**	.34**	.	.21*	.11	-.02	.13	.24*	-.16	.35**	.21*
4. Sensory Details	-.08	.28**	-.06	.09	-.02	.24*	.30**	.59**	.54**	.31**	.	.36**	.12	.37**	.18	-.20*	.09	.27**
5. Emotional Intensity	.19	.14	-.17	-.01	.04	.21*	.29**	.32**	.20	.17	.34**	.	.19	.25*	.02	-.05	-.08	.05
6. Visual Perspective	-.27**	.18	-.15	.07	.10	.12	-.06	.29**	.37*	.25*	.14	-.11	.	.17	.25*	-.09	.07	.14
7. Time Perspective	-.19	.19	-.13	.02	.07	.24*	-.00	.61**	.45**	.17	.33**	.05	.33**	.	.03	-.02	-.06	.18
8. Sharing	-.06	.12	-.15	.19	.18	.26*	-.29**	.19	-.06	.22*	-.01	-.14	.16	.12	.	-.08	.39**	.28**
9. Distancing	.01	-.11	-.01	-.07	-.01	-.19	.10	-.29**	-.27**	-.12	-.20*	-.02	-.24*	-.15	-.16	.	-.18	-.20*
10. Valence	-.14	-.01	-.14	.09	.18	.59**	-.59**	.21*	-.11	.30**	.05	.01	.11	.23*	.33**	-.04	.	.16
Age at the event	-.10	.04	-.14	-.04	.04	-.13	.05	-.09	.03	-.18	-.08	-.08	.01	-.01	-.18	.04	-.02	.
Time 2 Intercorrelations																		
Neuroticism (N)	.	-.34**	.53**	-.49**	-.55**	-.18	.33**	.14	.11	-.16	.09	.35**	-.05	.18	-.42**	.25*	-.27*	.10
Conscientiousness (C)	-.34**	.	-.41**	.36**	.33**	.27*	-.41**	.08	-.06	.21	.13	-.29*	-.07	-.19	.27*	-.25*	.33**	-.09
Depression (PHQ-9)	.53**	-.41**	.	-.61**	-.56**	-.28*	.38**	.01	.02	.00	.01	.22	.04	.11	-.27*	.28*	-.35**	-.11
Positive Functioning (FS)	-.49**	.36**	-.61**	.	.80**	.36**	-.46**	-.03	-.02	.02	.01	-.12	-.03	-.05	.19	-.28*	.29*	.13
Life Satisfaction (LS)	-.55**	.33**	-.56**	.80**	.	.25*	-.35**	-.13	-.09	-.16	-.11	-.25*	-.09	-.16	.25	-.28*	.25*	.08
Positive Affect (PA)	-.18	.10	-.16	.32*	.27*	.	-.55**	-.01	-.12	.28*	.23	-.05	-.32*	-.01	.29*	-.15	.67**	.20
Negative Affect (NA)	.05	-.18	.12	-.15	.00	-.31*	.	.22	.21	-.04	.10	.39**	.20	.12	-.24	.21	-.67**	-.31*
1. Vividness	-.25	.24	-.08	.14	.08	.34**	-.01	.	.53**	.56**	.67**	.57**	.29*	.66**	.07	-.09	-.27*	-.06
2. Coherence	-.18	.12	-.21	.14	.09	.16	-.11	.53**	.	.22	.43**	.40**	.30*	.58**	-.19	-.21	-.19	-.08
3. Accessibility	-.22	.05	-.06	.08	.06	.02	.04	.55**	.49**	.	.42**	.28*	.19	.33**	.30*	.03	.08	-.04
4. Sensory Details	-.14	.27*	-.10	.12	.01	.35**	.08	.66**	.31*	.33**	.	.57**	.23	.59**	.12	-.13	-.04	-.03
5. Emotional Intensity	.11	.10	-.00	.03	.01	.46**	.15	.36**	.10	.04	.56**	.	.18	.42**	-.07	.15	-.42**	-.04
6. Visual Perspective	-.16	.13	-.26*	.13	.08	.03	-.07	.49**	.56**	.43**	.34**	.19	.	.24	-.27*	-.34**	-.26*	-.21
7. Time Perspective	-.33*	.17	-.23	.20	.16	.13	-.11	.64**	.43**	.55**	.43**	.05	.39**	.	.01	-.06	-.23	.03
8. Sharing	-.17	.08	-.00	-.05	.13	.25	-.19	.25	.09	.23	.06	-.04	.01	.16	.	-.05	.25*	.21
9. Distancing	.20	-.03	-.03	-.05	.05	-.18	.23	-.35**	-.33**	-.20	-.35**	-.27*	-.38**	-.13	-.18	.	-.20	.10
10. Valence	-.24	.21	-.21	.34**	.37**	.63**	-.58**	.13	.08	.08	.13	.13	-.03	.20	.41**	-.23	.	.35**
Age at the event	-.07	-.02	-.22	.14	.11	.01	.22	-.04	.02	.06	.07	-.01	.07	-.14	-.19	-.00	-.06	.

Note. $N = 99$ had Turning Point and $N = 94$ had Childhood memory at Time 1; $N = 64$ had Turning Point and $N = 61$ had Childhood memory at Time 2. For each time point, Pearson's correlations above the diagonal are for Turning Point and below for Childhood Memory. Personality was assessed only at Time 1 with the Big Five Inventory. PHQ-9 = Patient Health Questionnaire; FS = Flourishing Scale; LS = Life Satisfaction (1-item). * $p < .05$. ** $p < .01$.

Table S2 – Intercorrelations among personality, depression and well-being variables at Time 1 and Time 2

	N	C	T1 PHQ-9	T1 FS	T1 LS	T2 PHQ-9	T2 FS	T2 LS
Neuroticism (N)	1	- .34**	.50**	- .39**	- .50**	.53**	- .49**	- .55**
Conscientiousness (C)		1	- .42**	.37**	.37**	- .41**	.36**	.33**
T1 Depression (PHQ-9)			1	- .55**	- .63**	.81**	- .60**	- .60**
T1 Positive Functioning (FS)				1	.76**	- .58**	.76**	.65**
T1 Life Satisfaction (LS)					1	- .57**	.73**	.77**
T2 Depression (PHQ-9)					¤	1	- .61**	- .56**
T2 Positive Functioning (FS)							1	.80**
T2 Life Satisfaction (LS)								1

Note. N = 103 completed questionnaires at Time 1 and N = 72 at Time 2. Personality was assessed only at Time 1 with the Big Five Inventory. PHQ-9 = Patient Health Questionnaire; FS = Flourishing Scale; LS = Life Satisfaction (1-item); T1 = Time 1; T2 = Time 2. ** $p < .01$.