Article

Longitudinal Relations Between Self-Defining Memories and Self-Esteem: Mediating Roles of Meaning-Making and Memory Function

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Abstract

The present study examines the role of self-defining memories in predicting self-esteem using a 1-year longitudinal design with an adult lifespan sample ($N = 1{,}216$; age range 18–92; $M_{age} = 49.52$; $SD_{age} = 17.25$). The interplay between narrators' personality at the life story level and two social-cognitive processes, meaning-making and functional memory use, is investigated. Participants provided three self-defining memories, and their personality positivity was assessed in terms of the ratio of positive-to-all memories. Memory narratives were reliably coded for meaning-making, and participants reported the extent to which they use each remembered event to serve adaptive functions. One year later, participants completed a measure of self-esteem. Personality positivity at Time 1 predicts greater self-esteem at Time 2. The effect of personality positivity occurs, however, completely through creating positive meaning and using memories functionally. The findings contribute to the literature on narrative identity and autobiographical memory by

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delineating how memory processes relate to self-regulation over time. The relative roles of personality and social-cognitive processes in autobiographical narratives in linking to self-esteem are discussed.

Keywords
autobiographical memory, function, life story, meaning-making, self-esteem

Recent theories describe personality in terms of individuals' construction of an ongoing life story (e.g., McAdams & Olson, 2010). That is, personality is, at least on one level, made up of the events that we remember and select to be part of our life story (Conway, Singer, & Tagini, 2004). This definition of personality moves beyond examination of the trait level (e.g., Rasmussen & Berntsen, 2010). Instead, this theoretical approach involves two related components of autobiographical memory: an internalized, relatively stable personality (e.g., which life events we retrieve to include in our life story; Rathbone, Moulin, & Conway, 2008; Singer & Salovey, 1993) and social-cognitive processes used to shape the memory to fit functionally with the remembering context (e.g., how we make meaning and use our stories; Bluck, Alea, & Demiray, 2010; McLean, Pausupathi, & Pals, 2007). That is, we conceptualize autobiographical memory as a dynamic system that includes a given set of retrieved life events that represent personality and also involves the reconstruction and use of memories in our everyday environment (Conway & Pleydell-Pearce, 2000; McAdams et al., 2006). In the current research, we differentiate these two components. We define and assess personality at the life story level (see Hooker & McAdams, 2003 for a review) through the type of self-defining memories individuals select to represent who they are. This allows us to articulate the interrelations between personality (at the life story level), social-cognitive processes that shape individual memories, and the relation of both of those to adult self-esteem.

Self-esteem is an important predictor of functioning in various life domains across the lifespan (e.g., relationships, job satisfaction, health; Orth, Robins, & Widaman, 2012). It denotes feeling satisfied with one's self, feeling capable, and seeing one's self as a person of worth (Rosenberg, 1965). Little research, however, has articulated how one's life story, particularly *self-defining memories* (Singer & Salovey, 1993), leads the way to self-esteem. Indeed, *what we remember* is different from *how we feel* about who we are. Using a 1-year longitudinal design with an adult lifespan sample, the current research addresses the relative roles of personality (i.e., self-defining life events) and social-cognitive processes in self-defining memory narratives (i.e., meaning-making, functional memory use) in relation to self-esteem. Specifically, we suggest that the extent to which individuals retrieve positive self-defining memories, more than negative or neutral ones, reflects their personality positivity at the life story level. That is, individuals' overall tendency of having a positive personality may be a starting

point for feelings of self-esteem (Singer, Blagov, Berry, & Oost, 2013), prompting healthy, positive meaning-making (Lilgendahl, McLean, & Mansfield, 2013) and adaptive utilization of those self-defining memories (Bluck & Alea, 2011). Positive meaning-making and functional memory use are mediators through which the narrator's personality leads to self-esteem.

Personality: Remembering Positive Self-Defining Memories Creates Self-Esteem

Self-defining memories are ones that individuals draw on to define themselves: They are vivid, emotion-laden memories that are often rehearsed (Singer & Salovey, 1993) and are an important aspect of adult personality (Singer, 1995). When considering personality as a life story (McAdams & Olson, 2010), one way that positive personality can be conceived is in terms of greater recall of positive events as self-defining. In a longitudinal study, McAdams et al. (2006) provided evidence that individuals' life stories reflect their personalities. They identified stable patterns (e.g., positive vs. negative emotional tone) in narratives of significant life story scenes (e.g., turning points) assessed at three times. In a large sample of young-old adults, recalling positive life events as more central to identity (i.e., than negative life events) predicted greater well-being (Berntsen, Rubin, & Siegler, 2011). Similarly, recall of more positive memories links to better well-being in terms of one's outlook on the future (Leist, Ferring, & Filipp, 2010). Given these findings, and common logic, we suggest that when asked to recall the events of their life, individuals who retrieve more positive self-defining memories are likely to have higher self-esteem. There are a variety of positive, negative, and neutral life events that each person can choose from. Some people focus more on positive while others select more negative events as self-defining. This positive tendency (i.e., personality positivity at the life story level) likely links to satisfactory feelings about the self.

Two Social-Cognitive Processes: Positive Meaning-Making and Functional Memory Use

Having a more positive personality is a good starting point for self-esteem but how do we get from simple retrieval of positive memories to creation of self-esteem? It may be that constructing positive meaning in the way individuals tell their memory narratives, and using their self-defining memories functionally, both act as pathways. This is consonant with theoretical views of autobiographical memory as a dynamic system (Conway et al., 2004; Conway & Pleydell-Pearce, 2000). Remembering involves retrieving events but also creating personal meaning about those events (Greenhoot & McLean, 2013; Singer & Blagov, 2004) and utilizing memories to serve adaptive functions (Baddeley, 1988; Bluck et al., 2010; Pillemer, 2009). Little research has examined meaning-making

and functional memory use as a bridge between personality at the life story level and self-esteem. Two studies testing the mediating role of autobiographical memories between trait personality and well-being outcomes, however, support our speculation. In Sutin (2008), the relation between trait conscientiousness and mastery is mediated by the extent of coherence in one's self-defining memories. She thereby highlights, as we hope to do, memory processes as a critical impetus that connects basic personality tendencies with adaptive outcomes. In a longitudinal study, Thomsen et al. (2016) found that negative meaning-making in life stories explains the relation between trait anxiety and depressive symptoms 10 years later. In line with their research, we suggest in the current study that individuals who have a more positive personality are likely to narrate more positive meaning when describing self-defining events, and use memories to serve adaptive psychosocial functions, leading to an adaptive outcome (i.e., self-esteem).

Positive Meaning-Making

Meaning-making is one critical aspect of autobiographical reasoning (Habermas & Bluck, 2000) through which individuals link events to the self across time (McAdams, 2013). Recent research has made great strides in examining narrative meaning-making in relation to well-being outcomes (e.g., Greenhoot & McLean, 2013; Westerhof, Bohlmeijer, van Beljouw, & Pot, 2010a). Individuals construct and reconstruct autobiographical memories, creating layers of meaning through the way an event is storied and narrated (McLean et al., 2007). Across adulthood, constructing positive meaning when telling events (whether the event itself is positive) has been linked to well-being (e.g., Liao, Bluck, & Cheng, 2015; Merrill, Waters, & Fivush, 2016). Providing more positive, sophisticated meaning-making is also associated with more favorable self-development such as more mature identity status (e.g., McLean & Pratt, 2006) and higher personal growth (e.g., Lilgendahl & McAdams, 2011). In contrast, narrating negative meaning predicts lower self-esteem (e.g., Adler, Kissel, & McAdams, 2006) and higher levels of depression, anxiety, and stress (e.g., Banks & Salmon, 2013). Given these findings, we expect that creating positive meaning in one's self-defining memory narratives should be associated with greater self-esteem.

Note, however, that there are individual differences in the extent to which people make positive narrative meaning (e.g., by gender, Grysman & Hudson, 2013; trait personality, Lilgendahl et al., 2013; age, Singer, Rexhaj, & Baddeley, 2007). Because the extent of meaning-making can vary, our focus is on positive meaning-making as a mediator between personality and self-esteem. That is, we suggest that individuals with a more positive personality (i.e., retrieving more positive events to define the self) tend to use positive meaning-making as a path to self-esteem. This is in line with Sutin (2008) who suggests that memory processes act as bridges between individual characteristics and well-being outcomes. That said, individuals with a positive personality still face a variety of positive

and negative life events, while they may be more inclined to create greater positive meaning from whatever life events that they have experienced, which, in turn, links to stronger feelings of self-esteem.

Functional Memory Use

Much less research has examined the relation between functional memory use and well-being outcomes such as self-esteem. None has focused on functional use of self-defining memories as a mediator between personality and self-esteem. The functional approach to autobiographical memory (Baddeley, 1988) highlights how autobiographical remembering serves adaptive psychosocial functions in daily life (e.g., Bluck et al., 2010; Pillemer, 2009). For example, functions include using memory to maintain the self, create social bonds (Alea & Bluck, 2007; Bluck & Alea, 2008), and direct future behavior (Kuwabara & Pillemer, 2010).

A basic assumption of the functional approach is that remembering the personal past is adaptive or beneficial (Bluck et al., 2010; Fivush, 2011). For example, using personally important memories to serve self, social, and directive functions is associated with well-being (e.g., life purpose, positive relationships with others; Waters, 2013) and using memories to serve self-functions is associated with greater personal growth (McLean & Lilgendahl, 2008). Several studies also indicate that thinking about the personal past for adaptive purposes fosters well-being (for a review, see Westerhof, Bohlmeijer, & Webster, 2010b). Longitudinal relations between functional use of memory and well-being have also been documented (e.g., life satisfaction; Cappeliez & Robitaille, 2010; O'Rourke, Cappeliez, & Claxton, 2011). Self-esteem is a crucial aspect of well-being. We thus expect that individuals who more frequently use self-defining memories to serve adaptive purposes (i.e., self, social, directive functions; Bluck & Alea, 2011) would show higher self-esteem.

Our main focus, however, is on variations in the functional use of memory as a mediator between personality and self-esteem. There are individual differences in what functions individuals believe memory is able to serve (e.g., Wang, Koh, Song, & Hou, 2015) and the extent to which individuals report using memories to serve adaptive functions (e.g., by gender, Alea & Bluck, 2007; age, Bluck & Alea, 2008; personality traits, Bluck & Alea, 2011). Past research shows that individuals with a more positive personality tend to use their memories to serve adaptive psychosocial functions. For example, individuals with higher trait openness more frequently use their memories to serve everyday functions (Rasmussen & Berntsen, 2010). Extraverted individuals more frequently use their memories to serve social functions (Alea, Bluck, & Ali, 2015). Individuals with a more negative personality (e.g., high in neuroticism) tend to use their memories in a less adaptive way (Cappeliez & O'Rourke, 2002). Using autobiographical memory as a resource in everyday life is a basic human process (Baddeley, 1988; Neisser, 1997) but one that shows variation across

individuals. We argue that having more positive personality (i.e., greater number of positive self-defining memories) may prompt one to more frequently use self-defining memories functionally—to know the self, create social bonds, and guide future behavior (Bluck & Alea, 2011) and thereby experience self-esteem. That is, individuals with a more positive personality may more fully realize that building self-esteem not only depends on simply retrieving positive self-defining memories but also depends on actively drawing on those memories to serve functions as needed in one's daily life.

The Current Study: Specific Hypotheses

Using correlational or experimental designs, past research has shown some positive relations between autobiographical remembering and self-esteem (e.g., Demiray & Janssen, 2015; Ross & Wilson, 2002, 2003). Adopting a longitudinal design, the current study contributes to the literature by examining whether positive meaning-making and functional memory use are two social-cognitive processes (i.e., mediators) translating a person's personality positivity, in terms of self-defining memories, into self-esteem 1 year later. Although the nonexperimental approach prevents us from establishing causal relations among these factors, the two-wave longitudinal design in the current study sheds light on how adults' positive self-view might be continuously fostered via the internalized yet flexible self-memory system (Conway et al., 2004). The study has three specific hypotheses.

Hypothesis 1: Personality Positivity Predicts Self-Esteem

The first hypothesis states that recall of a greater number of positive self-defining memories (rather than neutral or negative) predicts positive self-esteem 1 year later.

Hypothesis 2: Positive Meaning-Making and Functional Memory Use Predict Self-Esteem

The second hypothesis states that narrating more in-depth positive meaning in describing self-defining memories and reporting higher use of self-defining memories to serve adaptive functions are both expected to predict self-esteem 1 year later.

Hypothesis 3: Positive Meaning-Making and Functional Memory Use Are Mediators

The final hypothesis states that both positive meaning-making and functional memory use are indirect paths, suggesting they are processes that serve to bridge initial personality positivity and greater positive self-esteem 1 year later (see Figure 1).

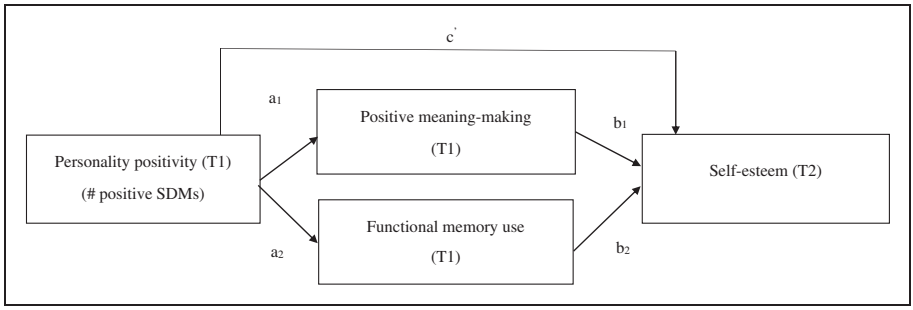

Figure 1. The proposed multiple-mediations model. SDMs = self-defining memories. Age and gender are excluded from the figure for presentation purposes. In actual analyses, age and gender were regressed on both mediators and self-esteem.

Method

Participants

Data were collected as part of the Longitudinal Internet Studies in the Social Sciences (LISS) panel, administered by CentERdata in the Netherlands. The LISS panel includes 5,000 households (i.e., more than 11,000 individuals) randomly selected from Dutch municipality registers in cooperation with Statistics Netherlands. The panel is a good representation of the Dutch population. Panel members fill out questionnaires on a monthly basis. Internet access and personal computers were provided to participants to complete online surveys.

Participants were screened using the 14-item Hospital Anxiety and Depression Scale (HADS, Dutch Version; Spinhoven et al., 1997), and 11% of the initial sample was excluded using the standard cutoff (9 or higher), to exclude possible cases with an anxiety or depression disorder (Bjelland, Dahl, Haug, & Neckelmann, 2002). This prevalence is similar to past research conducted in the Netherlands (De Graaf, ten Have, & van Dorsselaer, 2010).

Given the longitudinal nature of the study, there was some attrition. Logistic regression was used to predict any differences between those who were still in the study ($n = 1{,}216$) and those who had dropped out ($n = 238$) by Time 2. Predictors included age, gender, and the main variables of interests (i.e., personality positivity, narrative meaning-making, and functional memory use). Logistical regression shows that women were more likely than men to complete both time points, $OR = 1.40$, $p < .05$. Older persons were more likely than younger persons to complete the surveys at two time points, $OR = 1.04$, $p < .001$. As such, the final participants are a representative, adult lifespan sample ($N = 1{,}216$; female = 628; age range: 18–92; $M_{age} = 49.52$; $SD_{age} = 17.25$) who completed the LISS autobiographical memory module at Time 1 (Westerhof, 2015) and completed a self-esteem measure, 1 year later, at Time 2.

Procedure

At Time 1, participants provided three self-defining memories using standard instructions (i.e., modified version of Blagov & Singer, 2004). Instructions for the self-defining memories were as follows: *When we describe to other people who we are, we often tell something about our past. We would like to ask you to describe some personal memories that show who you are. These are memories that are very characteristic for you as a person. What type of memories are we asking about? They are personal memories that are important to you. They vividly come to your mind. They evoke strong positive or negative feelings. You will often have thought about them. We would like to ask you to describe three memories of this type which are at least 1 year old.*

Participants provided three memories. For each, they gave a short caption (i.e., Use a brief phrase to describe the memory) and then wrote a memory narrative (i.e., Describe the memory in as much detail as possible. Explain why it is characteristic of you as a person). Participants then rated the extent to which they use this memory to serve self, social, and directive functions (Bluck & Alea, 2011). A self-esteem scale was administered 1 year later. Two coders underwent coder training using narratives from a pilot study in the LISS panel. One of the trained coders reliably content-coded all memory narratives in the current study for event valence and meaning-making.

Measures

The main variables of interest are described later. This includes both coded and scalar assessments.

Personality positivity. Self-defining memories represent a person's personality (Singer, 1995). The relative frequency of using positive memories to define the self was conceptualized as personality positivity. To assess valence, each of the self-defining memory narratives was categorized as positive, neutral, or negative. Events that are generally considered negative in our society (e.g., illness, divorce, death) were coded as negative. Events that are normatively seen as positive (e.g., birth, wedding, achievements) were coded as positive. Events that were mainly a description without a clearly positive or negative evaluation (e.g., "as a girl I lived in the Netherlands Antilles") were coded as neutral.

Two coders used 50 narratives from the pilot study to test for intercoder reliability. Intercoder reliability was good (Cohen's kappa = .85). Participants provided three self-defining memories. The majority (75.8%) reported at least one positive event: 10.6% reported three, 28.6% reported two, and 36.6% reported one positive event. For negative events, 10.9% reported three, 27.5% reported two, and 37.3% reported one negative event. Neutral events were less frequently reported: 59.9% provided no neutral events, 31.1% provided one,

and 9% provided two neutral events. The personality positivity score was constructed as the ratio of positive memories to all self-defining memories generated by the participant. Higher scores indicate that individuals hold a higher ratio of positive self-defining memories (i.e., personality at the life story level).

Positive meaning-making. Extent of positive meaning in the self-defining memory narratives was assessed through content-coding using a modified version of Blagov and Singer's (2004) integrative meaning codebook. Table 1 provides narrative examples. Meaning-making was operationalized as three levels: 0 = no positive meaning, 1 = evaluation that indicates seeing the positive value of the memory, and 2 = evaluation that indicates finding positive meaning for one's self, or one's life, beyond the scope of the remembered event. Fifty narratives were used to test for intercoder reliability. Intercoder reliability was high (Cohen's kappa = .92). Mean scores were calculated across the three self-defining memories. Across all narratives, 53.4% contained no positive meaning, 31.44% contained positive value of the memory, and 15.13% contained positive meaning beyond the scope of the remembered event.

Note that a negative event (e.g., my husband passed away) can be assigned positive meaning (e.g., his death made me more self-supporting). The coding for event valence that we used to create personality positivity and the coding for positive meaning-making are two different coding aspects and were coded separately. There were very few cases where a narrative contained both positive and negative meaning. In these cases, a score was assigned based on the final meaning attributed to the memory. For example, positive meaning-making was assigned for the following memory narrative that included both negative and positive attributions because the participant summarized his military experience in a positive light:

> My experiences as a soldier made me who I am. Sometimes I do not feel understood, feel like an outcast in the society that I had defended. Yet, I would not have wanted to miss it: the life where we improvised to make things work, where we built something from nothing and trusted each other.

Functional memory use. To assess the extent to which individuals feel they use each of their self-defining memories to serve adaptive functions, modified items from the Thinking about Life Experiences Scale (TALE) were used (Bluck & Alea, 2011). Participants rated (1 = *not at all*, 6 = *very much*) the extent to which this memory is used to serve functions in their daily lives: *to help me know who I am*, *find a solution when I face a problem*, *and share with others*. Note this is a 3-item scale assessing memory function of each self-defining event, not the complete TALE measure which has multiple subscales. As such, items were combined to create a single function score in this study. Higher mean scores across the three

Table 1. Examples of Positive Meaning-Making.

Scoring	Examples
Score = 0	Caption: Stroke of wife (Man, 67 years)
No positive meaning; narrative involves only description	It was [date]. My wife was busy getting the suitcases packed because we were about to go to a holiday park with the children and grandchildren. She came down and said that I had to call the doctor because her entire left side was numb. I immediately called the emergency number, and the ambulance was there in 5 minutes. It turned out that she had had a mild stroke.
Score = 1	Caption: Liberation (Woman, 76 years)
Evaluation that indicates seeing positive value of the memory	After several days with 17 people together in a cabin under a barge (everyone had to sit cramped together because of the lack of space, although I could occasionally lie down behind the others' backs since I was the smallest one), I got my first piece of chocolate from my brother for my birthday. He had gotten it through exchanging with the Canadian soldiers for eggs. I thought it was really nice of him. My best birthday present ever! I was intensely happy with a relatively small but—at the time—big treat as it arrived just at the right time. I felt warm appreciation of my brother for giving me this gift.
Score = 2	Caption: A fire in Amsterdam (Man, 35 years)
Evaluation that indicates finding positive meaning for one's self, or one's life, beyond the scope of the remembered event	It's the very first thing I have a strongly conscious memory of from childhood. It is characteristic of me as a person because my father was very active in taking measures to reduce harm during this event—such as awakening residents and moving cars to make room for the fire brigade to get in to help everyone. It shaped my character: I too am now a person who is very helpful.

memories indicate seeing one's self-defining memories as more frequently used in serving adaptive functions. Internal consistency across the nine items (three items per memory) was good (Cronbach's $\alpha = .78$).

Self-esteem. In addition to the 10-item Rosenberg (1965) scale (e.g., *I feel that I have a number of good qualities*), 3 additional items were included to asses views about one's physical appearance, capacities, and overall self-esteem (i.e., *I am satisfied with the way I look*, *I have confidence in my capabilities*, *I feel good about myself*).

Participants responded using the following: 1 = *totally disagree* to 7 = *totally agree*. Five items were reverse scored. Higher mean scores indicate having greater self-esteem. The measure has excellent internal consistency (Cronbach's $\alpha = .90$).

Data Analysis Strategies

Pearson's correlation was conducted to present associations among variables of interest and to determine the inclusion of covariates (i.e., age, gender) in later analyses. Hierarchical regression analysis was used to test whether personality positivity predicts self-esteem (Hypothesis 1) and whether the two processes, creating positive meaning in narratives and adaptive functional memory use, explain any additional variance in self-esteem beyond personality positivity (Hypothesis 2). A multiple-mediation model was then run (Hypothesis 3), using Hayes' (2013) SPSS process macro with a nonparametric bootstrapping technique ($N = 1{,}000$). Age and gender were included as covariates, regressing on both mediators (i.e., positive meaning-making and functional memory use) and the dependent variable (i.e., self-esteem).

Results

Simple correlations among variables of interest are first presented. Major analyses testing Hypothesis 1 to 3 are presented subsequently.

Preliminary Analysis

As shown in Table 2, age is negatively related to positive meaning-making and positively to self-esteem. Gender is positively related to narrative meaning-making. Age and gender were thus included as covariates in major analyses. Personality positivity is associated with self-esteem as well as with positive making, and functional use of self-defining memories. Narrative meaning-making and reported memory function are also both positively associated with self-esteem. The major variables of interest are intercorrelated in expected directions with small to moderate magnitudes. Due to the large sample size, however, alpha level was set at .01 for major analyses (Hypothesis 1 to 3).

Hypothesis 1: Personality Positivity Predicts Self-Esteem

It was expected that personality positivity at Time 1 would predict self-esteem at Time 2. Age and gender were entered in Step 1; personality positivity was entered in Step 2. Hierarchical regression (Step 2; see Table 3) shows that, as expected, personality positivity is a predictor of self-esteem 1 year later ($\beta = .09$, $p < .01$) after controlling for age ($\beta = .10$, $p < .01$) and gender ($\beta = .07$, $p = .02$).

Table 2. Intercorrelations Among Age, Gender, and Variables of Interest.

	Range	*M* (*SD*)	Age	Gender	Personality positivity	Positive meaning	Functional memory use
Age		–					
Gender (male = 0, female = 1)		–	−.05				
Personality positivity	0–1	0.42 (0.31)	−.19**	.04			
Positive meaning-making	0–2	0.62 (0.52)	−.24**	.11**	.29**		
Functional memory use	1–6	3.59 (0.96)	.02	.07*	.07*	.15**	
Self-esteem	1–7	5.69 (0.81)	.08**	−.07*	.07*	.10**	.15**

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

Table 3. Personality Positivity, Positive Meaning-Making, and Functional Memory Use Predict Self-Esteem 1 Year Later.

	Self-esteem (Time 2)								
	Step 1			Step 2			Step 3		
	B	*SE*	*t*	*B*	*SE*	*t*	*B*	*SE*	*t*
Predictors (Time 1)									
Age	0.004	.002	2.80*	0.005	.002	3.34**	0.006	.002	3.75***
Gender (male = 0, female = 1)	−0.105	.046	−2.25*	−0.109	.046	−2.35*	−0.137	.046	−2.99**
Personality positivity				0.231	.075	3.08**	0.146	.076	1.91
Positive meaning-making							0.113	.024	4.73***
Functional memory use							0.147	.047	3.11**
$\triangle R^2$	.01**			.01**			.03***		
Total R^2	.01**			.02***			.05***		

*$p < .05$. **$p < .01$. ***$p < .001$.

Hypothesis 2: Positive Meaning-Making and Functional Memory Use Predict Self-Esteem

It was expected that positive meaning-making and adaptive functional memory use would positively predict self-esteem. As shown in Table 3 (Step 3), both

positive meaning-making and functional memory use do indeed predict greater self-esteem (βs = .09, .14, *p*s < .01, .001) after considering the effects of personality positivity, age, and gender. These two variables explain an additional 3% of the variance in self-esteem.

Hypothesis 3: Positive Meaning-Making and Functional Memory Use as Mediators

Though the results reported thus far are of interest in their own right, the major focus of the current study was to delineate how personality positivity predicts greater positive meaning-making and more use of one's self-defining memories, thereby leading to greater self-esteem. Results confirm our hypothesis. The relation between personality positivity and self-esteem is fully mediated through the indirect paths of positive meaning-making and functional memory use. Bootstrapped coefficients and standard errors (SE) are summarized in Table 4.

The overall model was significant ($c = 0.23$, $SE = 0.08$, $t = 3.08$, $p < .01$). In line with the hierarchical regression results (Step 3, Table 3), the direct effect of personality positivity on self-esteem became nonsignificant ($c' = 0.15$, $SE = 0.08$, $t = 1.91$, $p = .057$) when the two memory processes (i.e., meaning and function) were considered. The total indirect effect was significant, coefficient = 0.09, $SE = 0.02$, 99% CI [0.03, 0.15]. Specifically, both the indirect effect of positive meaning-making, $a_1 \times b_1 = 0.06$, $SE = 0.02$, 99% CI [0.01, 0.12], and the indirect effect of memory function were significant, $a_2 \times b_2 = 0.02$, $SE = 0.01$, 99% CI [0.0002, 0.06]. These indirect effects indicate unique contributions of each mediator (Preacher & Hayes, 2008). Their effects do not rely on the inclusion of one another. The pairwise contrast of the two indirect effects (i.e., positive meaning-making, functional memory use) indicated that there was no difference in terms of their effects, coefficient = 0.04, $SE = 0.02$, 99% CI [−0.03, 0.09], suggesting that they are equally important.

Discussion

Maintaining positive self-esteem is important to healthy flourishing across adulthood (Orth et al., 2012). How do people foster positive feelings about themselves? Our findings suggest that retrieving a greater number of positive self-defining memories to anchor one's personality can be a good first step in having self-esteem. Individuals who define their personality through positive memories are also more likely, however, to make meaning of, and adaptively use their self-defining memories. In keeping with the goals of this special issue, our discussion thus distinguishes between the narrator's personality and social-cognitive processes at work during memory retrieval (i.e., meaning-making, functional memory use) in relation to self-esteem. Our findings suggest that these relative fluid social-cognitive processes are critical pathways to self-

Table 4. Summary of Multiple-Mediation Model.

	Positive meaning-making (M1)				Functional memory use (M2)				Self-esteem (Y)			
Antecedent	Coeff.	*SE*	*p*		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*	
Personality positivity (X)	0.41	0.046	$< .001$	a_1	0.218	0.09	.01	a_2	0.146	0.077	.056	c'
Positive meaning-making (M1)	–	–	–		–	–	–		0.147	0.047	$< .01$	b_1
Functional memory use (M2)	–	–	–		–	–	–		0.114	0.024	$< .001$	b_2
Covariate												
Age	−0.007	0.001	$< .001$		0.002	0.002	.192		0.006	0.002	$< .001$	
Gender	0.094	0.028	$< .001$		0.131	0.055	.018		−0.137	0.046	$< .01$	
	$R^2 = 0.126$				$R^2 = 0.01$				$R^2 = 0.048$			
	$F(3, 1211) = 58.33$, $p < .001$				$F(3, 1211) = 4.16$, $p < .01$				$F(5, 1209) = 12.17$, $p < .001$			

Note. Coeff. = unstandardized coefficients; a_1 = direct effects of personality positivity on positive meaning-making; a_2 = direct effects of personality positivity on functional memory use; c' = direct effects of personality positivity on self-esteem; b_1 = direct effects of positive meaning-making on self-esteem; b_2 = direct effects of functional memory use on self-esteem.

esteem. Indeed, the relation between personality at the life story level and how individuals feel about themselves (i.e., self-esteem) is likely reciprocal (Wilson & Ross, 2003). Due to our research design, we focused our interpretation only on personality at the life story level in relation to use of social-cognitive processes (i.e., meaning, function) that ultimately predict self-esteem. Clearly though, a fuller conceptualization is that self-esteem then circles back to shape personality and social-cognitive processes.

Personality is not fixed but a lifelong operation allowing ongoing self-regulation (Hooker & McAdams, 2003; McAdams, 2013). According to the dynamic view of autobiographical memory (Conway et al., 2004), we argue, however, personality at the life story level may be multilayered. It encompasses two memory components: a relatively stable personality that is supported by selective autobiographical memories (e.g., self-defining memories), and fluid social-cognitive processes including meaning-making and functional use of memory. The Aim 1 and Aim 2 findings support this differentiation by showing that each component makes a unique contribution to self-esteem. The mediation findings suggest that self-regulation (Hooker & McAdams, 2003; McAdams, 2013) occurs through which self-defining memories one retrieves as central to one's personality (as a life story). That effect is fully mediated, however, suggesting that regardless of personality positivity, individuals can garner self-esteem through engaging in positive meaning-making and using memories to serve adaptive psychosocial functions.

Positive Meaning-Making as a Pathway

Personality is a constructed life story at one level, but other levels include traits and motivations (McAdams & Olson, 2010). Big Five trait personality, for example, is substantially related to self-esteem (Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001). At the life story level, however, personality is more fluid and dynamic as it involves memory processes that can, as our findings suggest, be used to create self-esteem. Individuals reflect on events and construct new meaning as they look back from different vantage points (Freeman, 2010). This provides opportunities to bolster self-esteem through creating meaning that brings satisfaction with the central events of one's life (Butler, 1963).

Consistent with past research on narrative meaning (e.g., Lilgendahl & McAdams, 2011; McLean & Pratt, 2006; Merrill et al., 2016) but adding new texture to this line of research, our findings show that defining the self as positive at the life story level is associated with meaning-making that ultimately is related to self-esteem. Specifically, our finding relating positive meaning-making to self-esteem articulates direct and mediating roles for positive meaning-making particularly to support self-esteem, and in a 1-year longitudinal context (see also Pals, 2006; Thomsen et al., 2016). The mediating role speaks to the relative importance of the narrator's personality and the process of narration: It is the

process of making positive meaning when talking about important life events that is responsible for higher self-esteem. Although individual differences (e.g., personality positivity, age, gender) may predispose one to create more or less meaning of the memories used to define one's self, creating positive meaning is one critical social-cognitive process accounting for feelings of self-esteem.

In the current study, meaning involved valuing positive aspects of an event or gaining positive insights about the self, or one's life. Such processes have been shown to be associated with positive mental health outcomes in a variety of settings. For example, benefit finding has been related to adjustment, particularly in the face of challenge (Davis, Nolen-Hoeksema, & Larson, 1998). The ability to forge a new worldview or have a growth-related perspective on one's personal past is related to well-being (e.g., Bauer & McAdams, 2004; Neimeyer, Prigerson, & Davis, 2002). It is thus unsurprising that we find positive meaning-making is related to self-esteem.

Making meaning goes beyond the basic capacity of memory as a record of the gist and detail of events (Bluck, Alea, Baron-Lee, & Davis, 2016). It creates context for integrating life events across a life story, with effects that spill over not only to interpretation of the remembered event itself but to one's view of self and life, positively linking to greater self-esteem. One example of this from the current research, a 62-year-old woman recalled an unhappy childhood but emphasized her positive qualities as a person:

> I'm the oldest in a family of six children and was confronted with caring for children and the household because of my mother's illness. Thus, I had an unhappy childhood. The first memory of this is that I had to hang the laundry to dry standing on a trashcan as a six-year-old. This, however, shaped me to become a caring person, which I actually do not feel bad about.

The framing of this woman's unhappy self-defining memory as shaping her into a caring person provides a sense of how meaning-making can foster self-esteem.

Functional Memory Use as a Pathway

While much research has focused on meaning-making in narratives (for a review, see Greenhoot & McLean, 2013), there are other ways in which self-defining memories can lead to positive outcomes. A novel aspect of the current work was our focus on the extent to which individuals report using their memories to serve adaptive functions in their lives. Consistent with one of the few empirical studies relating functional memory use to well-being (e.g., McLean & Lilgendahl, 2008), reported use of self-defining memories to serve adaptive functions was beneficial to self-esteem 1 year later. Specifically, individuals who have a more positive personality report using their self-defining memories more frequently to serve psychosocial functions, which then links to greater self-esteem.

Those who defined their personality as less positive reported using their memories less to serve adaptive functions. This may reflect that individuals who tend to view the self through a negative lens at the life story level are not eager to reflect on their personal past. They may consider such memories best forgotten to avoid reliving negative emotion or may be seen as less suitable for social sharing (McLean et al., 2007). Not using memories, negative or positive, to serve psychosocial functions, however, may be a mistake—coming at the cost of self-esteem. In terms of serving functions such as social bonding or directing behavior, both negative and positive memories can be used adaptively. Recalling a time when one was in pain, for example, can strengthen social bonds with others (e.g., empathy; Bluck, Baron, Ainsworth, Gesselman, & Gold, 2013). Recalling both negative and positive college experiences (when compared with no recall) guides future prosocial behavior (e.g., decision to donate to one's alma mater; Kuwabara & Pillemer, 2010).

Past research shows that individuals who are high on Extraversion and Openness to Experience (at the Big Five trait level) tend to use their memories for adaptive purposes (e.g., Alea et al., 2015; Rasmussen & Berntsen, 2010). Our findings also suggest how personality is related to adaptive memory use: Individuals who have a positive personality (at the life story level) appear to be more inclined to reflect on and share their self-defining memories, using them as a resource to serve psychosocial functions. Doing so appears to ultimately link to greater self-esteem. The fact that functional memory use is a mediator between personality and self-esteem, however, suggests that simply having a positive personality is not sufficient, but the process of using one's memories functionally pave the way to self-esteem over time. This finding fits well with the functional perspective that autobiographical remembering is a basic resource that humans rely on to respond to contextual demands (Neisser, 1997). Using self-defining memories functionally involves matching personal goals (Conway et al., 2004) to environmental needs such that memory flexibly serves the organism across situations (Bluck et al., 2010). As such, the more one uses personal self-defining memories as a resource the greater the likelihood of creating a positive self-environment fit that promotes self-esteem. Using both positive and negative memories to create self-continuity, bond with others, and direct future behavior is likely to affect mastery in meeting environmental demands and thereby fosters self-esteem.

Limitations

It is strength to have a 1-year longitudinal study with a large representative adult lifespan sample. We are unable, however, to make causal claims or examine bidirectional relations (Conway et al., 2004; Ross & Wilson, 2003) between self-defining memories and self-esteem. In particular, self-esteem was not assessed at Time 1 but may precede personality positivity and the two

memory processes examined. Indeed, we support a conceptualization of the relation of self-defining memories to self-esteem that is reciprocal and iterative. Longitudinal research using intense burst experience sampling (Larson & Csikszentmihalyi, 2014) might disentangle these effects.

Second, though positive meaning-making and functional use of self-defining memories had direct and indirect effects on self-esteem, effect sizes were relatively small. Macrolevel influences on self-esteem such as social support and financial resources (Robins et al., 2001; Wagner, Lang, Neyer, & Wagner, 2014) may be more influential. Our focus, however, was on microlevel memory processes that affect individuals' feelings about the self. It is remarkable that such processes significantly affect self-esteem over a 1-year period.

Conclusion

Our findings fit well with life story theory that fully embraces defining personality in terms of narrative identity (McAdams & McLean, 2013), and with a dynamic view of autobiographical memory (Bluck & Liao, 2013; Conway et al., 2004) as serving adaptive ends in daily life. Individuals rely on autobiographical memories, particularly those personally significant ones (e.g., self-defining memories; Singer & Blagov, 2004), to know who they are. This study suggests that those self-defining memories also play a role in how people *feel* about who they are. Two social-cognitive processes, narrative meaning-making and functional use of autobiographical memory, are critical to that role. It is not simply the events that happen to us but the way we remember and retell them (Glück & Bluck, 2014) and how we use those memories (Westerhof et al., 2010b) allows us to create stories of our lives that foster self-esteem.

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