RESEARCH ARTICLE

How nostalgia infuses life with meaning: From social connectedness to self-continuity

Wijnand A. P. van Tilburg* , Constantine Sedikides† , Tim Wildschut† & Ad J. J. M. Vingerhoets‡

* Department of Psychology, King's College London, London, UK
† Psychology Department, Center for Research on Self and Identity, University of Southampton, Southampton, UK
‡ Psychology Department, Tilburg University, Tilburg, The Netherlands

Correspondence
Wijnand A.P. van Tilburg, Department of Psychology, King's College London, Guy's Campus, Addison House Room 2.12, London SE1 1UL, UK.
E-mail: Wijnand.van_Tilburg@kcl.ac.uk

Received: 3 May 2017
Accepted: 4 June 2018

https://doi.org/10.1002/ejsp.2519

Keywords: nostalgia, social connectedness, self-continuity, meaning in life

Abstract

Nostalgia increases meaning in life (MIL), but how so? In four experiments —using varied operationalizations of nostalgia, diverse populations, and complementary methodologies—we identified a serial process. We hypothesized and found, in Experiment 1, that self-continuity boosts MIL. We hypothesized and found, in Experiment 2, that nostalgia increases MIL through self-continuity. Finally, we hypothesized and found, in Experiments 3–4, that nostalgia fosters social connectedness, which plausibly heightens self-continuity, which in turn strengthens MIL. The findings clarify an intricate pathway through which nostalgia renders life more meaningful.

Introduction

Nostalgia has existential gravitas: It infuses life with meaning. We propose that it does so by bridging one's past with one's present, a process reliant on social belongingness and acceptance. For the first time, we examined the causal links among these variables in four experiments. Specifically, we tested whether nostalgia fosters social connectedness, which subsequently increases self-continuity, which in turn promotes meaning. We begin by reviewing relevant literature on each of these proposed constituents of the nostalgia–meaning link before describing the corresponding experiments.

Nostalgia

Nostalgia is a self-relevant emotion (Van Tilburg, Wildschut, & Sedikides, 2017), defined as "a sentimental longing or wistful affection for the past" (*The New Oxford Dictionary of English*, 1998, p. 1266). Nostalgia is experienced relatively frequently (i.e., several times a week) across cultures and ages (Batcho, 1995; Hepper, Wildschut, Sedikides, Robertson, & Routledge, 2018; Hepper et al., 2014). The emotion is typically expressed in terms of narratives referring to momentous occasions from one's life, such as graduations, weddings, vacations, or holiday dinners, in which the self constitutes the main character driving action or receiving others' action (Batcho, 1998; Wildschut, Sedikides, Arndt, & Routledge, 2006). As such, nostalgia serves several self-functions: It activates positive self-attributes (Vess, Arndt, Routledge, Sedikides, & Wildschut, 2012), raises self-esteem (Hepper, Ritchie, Sedikides, & Wildschut, 2012; Wildschut et al., 2006), and increases optimism for one's future (Cheung et al., 2013; Kersten, Cox, & van Enkevort, 2016).

Nostalgia is also a social emotion. It may often refer to momentous occasions from one's personal past, but these occasions are nevertheless "peopled" (Hertz, 1990, p. 195). Indeed, content coding revealed that, although the self is the protagonist of nostalgic narratives, the self is almost always surrounded and influenced by close others (e.g., relatives, friends, romantic partners; Abeyta, Routledge, Roylance, Wildschut, & Sedikides, 2015; Holak & Havlena, 1992; Wildschut et al., 2006). By reliving the past through nostalgia, the individual symbolically reignites bonds with close others (Batcho, 1998; Cavanaugh, 1989; Sedikides, Wildschut, & Baden, 2004). As a result, the individual experiences social connectedness, defined as a sense of belongingness and acceptance. Nostalgia indeed fosters social connectedness, typically operationalized as feeling connected with others, protected, and loved (Hepper et al., 2012; Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010; Wildschut et al., 2006).

Finally, nostalgia is a bittersweet emotion, albeit more sweet than bitter (Sedikides & Wildschut, 2016). When asked about definitional features of the construct "nostalgia" (i.e., prototype analysis; Rosch,

1978), laypersons mention fond and rose-colored memories of one's childhood or close relationships, keepsakes or sensory cues, and mostly positive feelings (e.g., happiness, contentment) but also negative ones (e.g., yearning, wishing to return to the past; Hepper et al., 2012). Likewise, nostalgia narratives, as indicated by content analyses, are characterized primarily by positive feelings (i.e., warmth, affection, joy, elation, tenderness, serenity) and secondarily by negative ones (i.e., sadness, irritation, loss; Batcho, 2007; Holak & Havlena, 1998). Also, nostalgic narratives contain more positive than negative affect, and nostalgia induces more positive than negative affect (Reid, Green, Wildschut, & Sedikides, 2015; Van Tilburg, Bruder, Wildschut, Sedikides, & Göritz, 2018; Wildschut et al., 2006). Taken together, when nostalgizing, the individual typically reflects on a momentous life occasion, reviews it with rose-colored glasses, and may wish to return to it. The individual feels contentment or happiness, tinged with sadness or longing.

Nostalgia and Meaning in Life

Nostalgia confers psychological benefits (Van Tilburg, Sedikides, & Wildschut, 2018) and meaning in life (MIL) is a prime example of such a benefit. MIL is defined as the subjective perception that one's life has a measure of predictability or order (is coherent), has direction or goals (is purposeful), and has worth or value (is significant) (King, Heintzelman, & Ward, 2016; Krause & Hayward, 2014; Van Tilburg & Igou, 2013). Laboratory or field experiments induce nostalgia with reflections on one's past (nostalgic vs. not) or song lyrics (pre-tested to be nostalgic vs. not), and subsequently assess the presence of meaning in one's life. These studies find consistently that nostalgia increases MIL (Hepper et al., 2012; Reid et al., 2015; Routledge et al., 2011; Routledge, Wildschut, Sedikides, Juhl, & Arndt, 2012; Sedikides et al., 2018; for reviews, see: Routledge, Sedikides, Wildschut, & Juhl, 2013; Sedikides & Wildschut, 2018).

Nostalgia, Self-Continuity, and Meaning in Life

But how does nostalgia promote MIL? We propose that it does so by augmenting self-continuity, defined as a sense of connection between one's past and one's present (Davis, 1979; Sedikides, Wildschut, Gaertner, Routledge, & Arndt, 2008; Vignoles, 2011). Specifically, people create narratives of their own lives that tie together their changing self-concept over time. This process of building self-continuity through narratives helps people to make sense of positive and negative events, connect them to close others (e.g., parents), perceive the self as part of the broader cultural context (McLean, Pasupathi, & Pals, 2007), and, importantly, understand the current self in the context of the past self. As such, self-continuity likely engenders perceptions of one's life as more predictable or coherent, and as more purposeful or significant—that is, as more meaningful.

There is preliminary evidence that self-continuity is linked to existential equanimity. When self-continuity (operationalized as autobiographical coherence) is threatened via a mortality salience manipulation, a compensatory reaction ensues manifesting as bolstering the order and significance of one's life (Landau, Greenberg, Sullivan, Routledge, & Arndt, 2009). In addition, self-continuity is positively correlated with MIL (Vignoles, Regalia, Manzi, Golledge, & Scabini, 2006), although, as far as we know, no causal evidence for this relation exists.

Why does nostalgia rely on self-continuity as a vehicle that infuses life with meaning? As stated above, nostalgia entails momentous occasions from one's life. These occasions typically are cultural rituals (Berntsen & Rubin, 2004), that is, communal traditions that capture and elucidate one's life trajectory (i.e., how the individual travelled from prior life stages to the present one) and also serve as temporal landmarks for navigating through life (i.e., one can rely on such traditions to mark the passage of time). It is this nostalgia-elicited self-continuity, then, that will contribute to gains in MIL. Although prior investigations have documented that nostalgia augments self-continuity (Sedikides, Wildschut, Routledge, & Arndt, 2015; Sedikides et al., 2016), no research has tested the hypothesis that self-continuity constitutes a mechanism through which nostalgia increases MIL.

Nostalgia, Social Connectedness, Self-Continuity, and Meaning in Life

Where does self-continuity originate? It may do so in nostalgia-induced social connectedness. As mentioned, nostalgic occasions typically comprise cultural traditions (Berntsen & Rubin, 2004) that weave the narrative thread of relational bonds. Nostalgic recollections of a childhood Christmas lunch, for example, may trigger recollections of other Christmas lunches, resulting in a cognitive storyboard of one's relational bonds with family members over time. Such a storyboard will likely fortify self-continuity (McLean et al., 2007). As another example, nostalgic recollections of the first date during a wedding anniversary dinner may frame the relationship and one's self-views as continuing across time and life stages. Here, again, nostalgia-derived social connectedness may reinforce the perception of a social fabric that links the past self with the present self.

Furthermore, recollections of valued relational bonds that are characteristic of nostalgia may influence one's self-concept through an inclusion mechanism (i.e., incorporating close others into the way one currently views the self; Aron & Nardone, 2012) or a reflected appraisal mechanism (i.e., perceiving the self as close others used to do; Wallace & Tice, 2012). These mechanisms may decrease the subjective distance (D'Argembeau et al., 2008) between the

person's past self and present self, thus enabling their life trajectory to be represented as a continuous journey rather than a sequence of random events (Landau, Meier, & Keefer, 2010). For example, nostalgic recollections of a dear friend's resilience during a troublesome life event may continue to inspire and affirm one's own resilience in the present (inclusion process). Likewise, nostalgic recollections of grandparents' confidence in oneself may continue to act as a fountain of one's self-confidence (reflected appraisal process). These processes will contribute to a surge in self-continuity. Evidence has been consistent with the above link: Nostalgia fosters social connectedness, which in turn elevates self-continuity (Sedikides et al., 2016). However, no research has tested whether self-continuity fits as a critical mechanism through which nostalgia-induced social connectedness elevates MIL.

Current Research

The literature has indicated that people find MIL in nostalgia, but the process through which they do so is unclear. We set to clarify it by highlighting the role of self-continuity. In particular, we proposed three hypotheses and tested them in four experiments. According to Hypothesis 1 (H1), self-continuity strengthens MIL (self-continuity ⇒ MIL; Experiment 1). According to H2, self-continuity originates in nostalgia and subsequently strengthens MIL (H2: nostalgia ⇒ self-continuity ⇒ MIL; Experiment 2). Finally, according to H3, the social connectedness derived from nostalgia elevates self-continuity, which then strengthens MIL (nostalgia ⇒ social connectedness ⇒ self-continuity ⇒ MIL; Experiments 3–4). We examined these hypotheses via converging practices, that is, using multiple operationalization of nostalgia (e.g., event recall, induction through music), testing both university students and community members, and adopting differing experimental manipulations (e.g., between-subjects, within-subjects).

We primarily used an experimental-causal-chain design to assess the proposed links (Spencer, Zanna, & Fong, 2005). This design involves a series of experiments that sequentially test each link within a larger mediational model. We complemented this approach with a measurement-of-mediation design (Hayes, 2013), which involves testing the proposed mediation model with correlational data.

More often than not, nostalgia elicits positive affect but not negative affect (for reviews, see: Sedikides & Wildschut, 2016; Sedikides, Wildschut, Routledge, Arndt, Hepper, et al., 2015). Importantly, nostalgia has unique effects on MIL, as well as on social connectedness and self-continuity, above and beyond positive affect and negative affect (Sedikides & Wildschut, 2016, 2018; Sedikides, Wildschut, Routledge, Arndt, Hepper, et al., 2015). Nevertheless, we assessed positive affect (Experiments 2–3) and negative affect (Experiments 3), and controlled for them in subsidiary analyses, available online as Appendix S1. In each case, results were essentially unchanged when we controlled for affect. Our sample selection was guided by prior relevant studies and pragmatic considerations: We aimed for large samples within defined temporal intervals for completion (e.g., 2-month periods in Experiments 2–3).

Experiment 1: Establishing a Causal Path Between Self-Continuity and Meaning in Life

In Experiment 1, we tested H1, namely, that self-continuity strengthens MIL (self-continuity ⇒ MIL). We manipulated self-continuity and assessed MIL in a sample of community members.

Method

Participants and design. We recruited, via MTurk, 220 U.S. residents (129 women, 90 men, 1 genderqueer) aged 19–67 years (M = 36.09, SD = 11.57). We randomly assigned them either to the high self-continuity (n = 104) or the low self-continuity (n = 116) condition. We compensated participants with $0.20.

Materials and procedure. We manipulated self-continuity by adapting a procedure introduced by Sedikides, Wildschut, Routledge, & Arndt (2015, Study 2). Specifically, we instructed participants in the high self-continuity condition to describe an aspect of their life that was invariant across their past and present self: "Please think of an important aspect of yourself. Specifically, try to think of an important aspect that you believe characterized you in the past, and continues to characterize you in the present." Participants proceeded to describe in writing, for a minimum of two minutes, the relevant aspect of their life and how it made them feel. Examples of life aspects are "computer programming" and "hard worker." We instructed participants in the low self-continuity condition to describe an aspect of their life that no longer characterized life in the present: "Please think of an important aspect of yourself. Specifically, try to think of an important aspect that you believe characterized you in the past, but no longer characterizes you in the present." Examples are "becoming a sports enthusiast" and "retiring from the air force."

Participants then completed a self-continuity manipulation check consisting of two items (Sedikides et al., 2016): "I feel connected with my past", "I feel that there is continuity in my life" (Cronbach's α = .74). Next, they completed the dependent measure, MIL. It also consisted of two items (Routledge et al., 2011): "I feel that life is meaningful", "I feel that life has a purpose" (Cronbach's α = .91). Response scales for both the manipulation check and the dependent measure ranged from 1 (*strongly disagree*) to 7 (*strongly agree*).

Results and Discussion

Manipulation check. As intended, participants reported greater self-continuity in the high (M = 5.82, SD = 1.13) than low (M = 4.80, SD = 1.36) self-continuity condition, $F(1, 218) = 36.20$, $p < .001$, $\eta_p^2 = .14$. The manipulation was effective.

Meaning in life. Participants reported more MIL in the high (M = 5.83, SD = 1.36) than low (M = 5.33, SD = 1.52) self-continuity condition, $F(1, 218) = 6.53$, $p = .011$, $\eta_p^2 = .03$. In support of H1, self-continuity strengthens MIL.

Experiment 2: Self-Continuity as a Mechanism Through Which Nostalgia Promotes Meaning in Life

In Experiment 2, we tested H2, namely, that nostalgia promotes MIL by augmenting self-continuity (nostalgia ⇒ self-continuity ⇒ MIL). We manipulated nostalgia using an event recall task and assessed self-continuity and MIL in a sample of university students and community member volunteers.

Method

Participants and design. We recruited, using a snowball sampling procedure, 589 Irish residents comprising University of Limerick students and members of the public (332 women, 257 men), and ranging in age from 17 to 85 years (M = 26.07, SD = 11.22). We randomly assigned them either to the nostalgia condition (n = 278) or the control condition (n = 311).

Materials and procedure.

Manipulation. We manipulated nostalgia with the Event Reflection Task (Sedikides, Wildschut, Routledge, Arndt, Hepper, et al., 2015). Participants reflected either on a nostalgic event (nostalgia condition) or an ordinary autobiographical event (control condition). In the nostalgia condition, participants were instructed to "… think of a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic." In the control condition, participants were instructed to "… think of an ordinary event in your daily life. Specifically, try to think of an ordinary past event that took place in the last week." Participants then listed four keywords capturing the respective event and provided a narrative description of it for 5 minutes. Next, they responded to two manipulation check questions (Wildschut et al., 2006): "Right now, I am feeling quite nostalgic", "Right now, I am having nostalgic feelings" (1 = *strongly disagree*, 6 = *strongly agree*; Cronbach's α = .96).

Self-continuity. Participants completed a measure of self-continuity (Sedikides, Wildschut, Routledge, & Arndt, 2015; Sedikides et al., 2016) consisting of four items. The items, preceded by the stem "I feel …", were: "connected with my past", "connected with who I was in the past", "important aspects of my personality remain the same across time", "there is continuity in my life" (1 = *strongly disagree*, 6 = *strongly agree*; Cronbach's α = .78).

Meaning in life. Participants completed a measure of MIL (Van Tilburg, Igou, & Sedikides, 2013, Study 6). Five items assessed the extent to which the (nostalgic or ordinary) memory elicited MIL. The items, preceded by the stem "This memory gives me …" were: "a sense of meaning", "a sense of purpose", "the impression that things make sense", "a sense of value", "a sense of significance" (1 = *strongly disagree*, 6 = *strongly agree*; Cronbach's α = .94).

Positive affect and negative affect. Participants filled out the short form of the Positive and Negative Affect Schedule (Mackinnon et al., 1999), which contains a 5-item positive affect subscale and a 5-item negative affect subscales. The positive affect items, preceded by the stem "To what extent do you feel …" were: "inspired", "enthusiastic", "determined", "excited", "alert" (1 = *not at all*, 5 = *extremely*; Cronbach α = .78). The negative affect items, preceded by the same stem, were: "distressed", "afraid", "upset", "nervous", "scared" (1 = *not at all*, 5 = *extremely*; Cronbach's α = .87).

Results and Discussion

We conducted one-way ANOVAs before engaging in mediational analyses. We display correlations among variables in Table 1.

Manipulation check. As intended, participants felt more nostalgic in the nostalgia (M = 4.15, SD = 1.53) than control (M = 2.84, SD = 1.61) condition, $F(1, 586) = 101.72$, $p < .001$, $\eta_p^2 = .15$. The manipulation was effective.

Self-continuity. Nostalgic participants (M = 4.44, SD = 1.01) reported greater self-continuity than control participants (M = 3.58, SD = 1.18), $F(1, 574) = 86.76$, $p < .001$, $\eta_p^2 = .12$. This result replicates prior findings (Sedikides, Wildschut, Routledge, & Arndt, 2015; Sedikides et al., 2016).

Meaning in life. Nostalgic participants (M = 3.80, SD = 1.24) reported higher MIL than control participants (M = 3.12, SD = 1.43), $F(1, 582) = 36.50$,

Table 1. Correlations among variables (Experiment 2)

		1	2	3
1	Self-continuity	–		
2	Meaning in life	.53***	–	
3	Positive affect	.20***	.20***	–
4	Negative affect	−.11**	−.05	−.05

**$p < .01$, ***$p < .001$.

$p < .001$, $\eta_p^2 = .06$. This result also corroborates prior findings (Routledge et al., 2011, 2012; Sedikides et al., 2018).

Positive affect and negative affect. Nostalgic ($M = 3.57$, $SD = 0.71$) and control ($M = 3.56$, $SD = 0.77$) participants did not differ on positive affect, $F(1, 583) = 0.11$, $p = .916$, $\eta_p^2 = .00$. Nostalgic ($M = 2.38$, $SD = 0.87$) and control ($M = 2.32$, $SD = 0.88$) participants did not differ on negative affect either, $F(1, 583) = 0.596$, $p = 441$, $\eta_p^2 = .00$.

Mediational analyses. We tested whether the effect of nostalgia (vs. control) on MIL is mediated by self-continuity, using a procedure developed by Hayes (2013); Model 4). We dummy coded the nostalgia condition (0 = control, 1 = nostalgia). Nostalgia augmented self-continuity, $B = 0.86$, $S_e = 0.09$, $t(572) = 9.28$, $p < .001$, $\eta_p^2 = .13$, which in turn predicted higher MIL, $B = 0.59$, $S_e = 0.04$, $t(571) = 13.24$, $p < .001$, $\eta_p^2 = .24$. The effect of nostalgia on MIL after controlling for self-continuity, $B = 0.17$, $S_e = 0.11$, was not significant, $t(571) = 1.64$, $p = .101$, $\eta_p^2 = .00$. Most importantly, 5,000 bias-corrected and accelerated bootstraps confirmed that the indirect effect of nostalgia on MIL via self-continuity was significant, $B = 0.50$, $S_e = 0.07$, $0.38 < B_{95} < 0.65$, partially standardized indirect effect, $\beta_p = .36$ (Hayes, 2013). This indirect effect remained significant when we controlled for affect (see Appendix S1). The results are consistent with the possibility that self-continuity mediates the effect of nostalgia on MIL.

Experiment 3: Nostalgia-Induced Social Connectedness, Via Self-Continuity, Increases Meaning in Life: A Within-Subjects Test of the Full Mediational Sequence

In Experiment 3, we tested H3, namely, that nostalgia fosters social connectedness, which is associated with greater self-continuity, which in turn strengthens MIL (nostalgia ⇒ social connectedness ⇒ self-continuity ⇒ MIL). We manipulated nostalgia as a within-subjects variable in order to afford a powerful test of the hypothesis (Greenwald, 1976). Next, we assessed social connectedness, self-continuity, and MIL, as well as positive affect. In contrast to Experiment 2, we induced nostalgia using songs instead of event recall. Furthermore, participants were Dutch community members recruited via a popular radio program.

Method

Participants and design. Participants were 519 residents of The Netherlands (284 women, 235 men) ranging in age from 12 to 71 years ($M = 45.60$, $SD = 11.32$). We relied on music's capacity to elicit nostalgia (Barrett et al., 2010; Cheung et al., 2013; Study 3; Routledge et al., 2011, Study 1) and sampled participants from a radio station's website. Each participant listened sequentially to two songs, a nostalgic and a happy (control) one. The design was mixed, with song (nostalgic, control) as the within-subjects factor and song order (nostalgic first, control first) as the between-subjects factor. Participants did not receive a reward for their participation.

Materials and procedure. We recruited visitors to the "Top2000.nl" website of the Dutch Radio 2 during December 2010 and January 2011. We issued an invitation for participation and linked it to an online survey. Those who accepted the invitation listened to a nostalgic and a happy (control) song. The nostalgic song, dating back to 1974, was "Het Dorp" ("The Village") by Wim Sonneveld. The happy song, dating back to 1965, was "Nikkelen Nelis" ("Nickeled Nelis," a fictional character) by the same artist.

After the first song, participants responded to five 2-item measures (1 = *not at all*, 5 = *very much*). The first one involved a manipulation check (Wildschut et al., 2006; Zhou, Sedikides, Wildschut, & Gao, 2008), asking whether the song made participants feel "nostalgic" and "longing for their past" (Cronbach's $\alpha = .81$). The second one involved the first putative mediator, social connectedness (Wildschut et al., 2006, 2010), asking whether the song made participants feel "connected to close others" and "loved" (Cronbach's $\alpha = .86$). The third measure involved the second putative mediator, self-continuity (Sedikides, Wildschut, Routledge, & Arndt, 2015; Sedikides et al., 2016), asking whether the song made participants feel "connected to your past" and "that there is continuity in your life" (Cronbach's $\alpha = .72$). The fourth one involved the dependent measure, MIL (Routledge et al., 2011, 2012), asking whether the song made participants feel that "life is meaningful" and "life has a purpose" (Cronbach's $\alpha = .81$). The fifth and final one involved the control, positive affect (Diehl, Jacobs, & Hastings, 2006; Hepper et al., 2012; Wildschut et al., 2006), asking whether the song made participants feel "happy" and "cheerful" (Cronbach's $\alpha = .91$). Participants responded to the same five measures after listening to the second song: manipulation check (Cronbach's $\alpha = .88$), social connectedness (Cronbach's $\alpha = .89$), self-continuity (Cronbach's $\alpha = .79$), MIL (Cronbach's $\alpha = .96$), and positive affect (Cronbach's $\alpha = .95$).

Results and Discussion

We first performed a series of 2 (song type) × 2 (song order) ANOVAs. After that, we conducted a serial mediational analysis where the effect of nostalgia on MIL was mediated by social connectedness and then by self-continuity. We display correlations among variables in Table 2. We report separate results for each song order in Appendix S1.

Manipulation check. The song type main effect was significant, $F(1, 517) = 363.42$, $p < .001$, $\eta_p^2 = .41$. Participants reported higher levels of nostalgia when they listened to the nostalgic song ($M = 4.27$, $SD = 1.48$) than the control song ($M = 3.08$, $SD = 1.54$). A significant song order main effect indicated that participants reported more nostalgia when the control song was first and the nostalgia song second ($M = 3.81$, $SD = 1.45$) than when the nostalgia song was first and the control song second ($M = 3.54$, $SD = 1.23$), $F(1, 517) = 5.40$, $p = .021$, $\eta_p^2 = .01$. Also, an interaction between song order and song type, $F(1, 517) = 15.75$, $p < .001$, $\eta_p^2 = .03$, indicated that the nostalgic (vs. control) song increased nostalgia more when it was played first rather than second; however, the effect of song type was significant within both song orders.

Social connectedness. The song main effect was significant, $F(1, 517) = 193.47$, $p < .001$, $\eta_p^2 = .27$. Participants reported stronger social connectedness when they listened to the nostalgic ($M = 3.25$, $SD = 1.40$) than the control ($M = 2.46$, $SD = 1.31$) song. The song order main effect was not significant, $F(1, 517) = 0.03$, $p = .873$, $\eta_p^2 = .001$. We also found an interaction, $F(1, 517) = 13.22$, $p < .001$, $\eta_p^2 = .03$, indicating that the nostalgic (vs. control) song increased social connectedness more when it was played first rather than second. However, the effect of song type was significant within both song orders. In replication of prior findings (Hepper et al., 2012; Wildschut et al., 2006; Zhou et al., 2008), nostalgia fostered social connectedness.

Self-continuity. The song main effect was significant, $F(1, 517) = 271.87$, $p < .001$, $\eta_p^2 = .35$. Participants reported greater self-continuity when they listened to the nostalgic ($M = 3.74$, $SD = 1.33$) than the control ($M = 2.76$, $SD = 1.35$) song. A significant song order main effect, $F(1, 517) = 3.89$, $p = .049$, $\eta_p^2 = .01$, indicated that participants reported greater self-continuity when the control song was first and the nostalgia song second ($M = 3.35$, $SD = 1.28$) than when the nostalgic song was first and the control song second ($M = 3.15$, $SD = 1.05$). Further, an interaction, $F(1, 517) = 9.49$, $p < .002$, $\eta_p^2 = .02$, indicated that the nostalgic (vs. control) song increased self-continuity more when it was played first rather than second; importantly, the effect of song type was significant within both orders. Replicating prior findings (Sedikides, Wildschut, Routledge, & Arndt, 2015; Sedikides et al., 2016), nostalgia strengthened self-continuity.

Table 2. Correlations among variables (Experiment 3)

		1	2	3
1	Social connectedness	–		
2	Self-continuity	.78***	–	
3	Meaning in life	.77***	.76***	–
4	Positive affect	.54***	.53***	.49***

Note: Correlations were estimated with data of song oders combined.
***$p < .001$.

Meaning in life. The song main effect was significant, $F(1, 517) = 220.24$, $p < .001$, $\eta_p^2 = .299$. Participants reported more MIL when they listened to the nostalgic ($M = 3.49$, $SD = 1.54$) than the control ($M = 2.57$, $SD = 1.39$) song. The song order main effect was not significant, $F(1, 517) = 1.19$, $p = .275$, $\eta_p^2 = .002$. One again, this main effect was qualified by an interaction, $F(1, 517) = 8.02$, $p < .005$, $\eta_p^2 = .02$, indicating that the nostalgic (vs. control) song increased MIL more when it was played first rather than second. Crucially, the effect of song type was significant within both song orders. Together, and in replication of prior findings (Routledge et al., 2011, 2012; Sedikides et al., 2018), nostalgia increased MIL.

Positive affect. The song main effect was not significant, $F(1, 517) = 0.92$, $p = .337$, $\eta_p^2 = .001$. The nostalgic and control songs elicited equivalent levels of positive affect. The song order main effect was not significant either, $F(1, 517) = 0.04$, $p = .851$, $\eta_p^2 = .001$. However, a significant interaction emerged, $F(1, 517) = 12.73$, $p < .001$, $\eta_p^2 = .02$, indicating that the nostalgic (vs. control) song decreased positive affect when it was played first but marginally increased positive affect when it was played second.

Mediational analyses. We hypothesized a serial mediation, according to which the influence of nostalgia (vs. control) on MIL would be mediated by social connectedness and in turn self-continuity. We proceeded to estimate the corresponding mediation model (Figure 1) using the procedure developed by Montoya and Hayes (2017) for testing mediation in two-condition within-subjects designs. Song (nostalgic vs. control) was a predictor of social connectedness (the first mediator). We treated social connectedness as a predictor of self-continuity (the second mediator); self-continuity then predicted MIL. Additionally, we included direct effects of song on self-continuity and MIL along with direct effects of social connectedness on MIL.

The nostalgic song, relative to control, increased social connectedness, $B = 0.80$, $S_e = 0.06$, $t(518) = 14.38$, $p < .001$, which in turn predicted higher self-continuity, $B = 0.71$, $S_e = 0.03$, $t(516) = 20.20$, $p < .001$; also, self-continuity was positively associated with MIL, $B = 0.28$, $S_e = 0.05$, $t(514) = 5.72$, $p < .001$. The direct effect of song on self-continuity remained significant, $B = 0.44$, $S_e = 0.05$, $t(516) = 8.43$, $p < .001$, as did the direct effect of song on MIL, $B = 0.30$, $S_e = 0.06$, $t(514) = 5.02$, $p < .001$. Also, a significant partial association between social connectedness and MIL emerged, $B = 0.42$, $S_e = 0.05$, $t(514) = 8.25$, $p < .001$. Most importantly, 5,000 bias-corrected bootstraps (Hayes, 2009) affirmed the significance of a serial indirect effect of nostalgia on MIL via

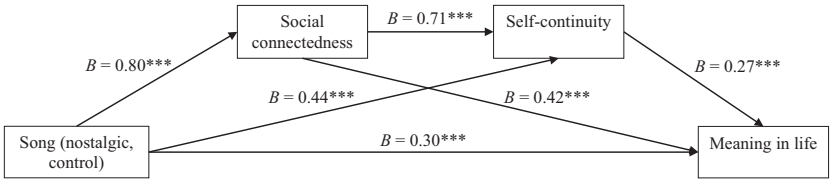

Fig. 1: Mediational sequence (Nostalgia ⇒ Social connectedness ⇒ Self-continuity ⇒ Meaning in life) in Experiment 3. ***$p < .001$

social connectedness and self-continuity, $B = 1.57$, $S_e = 0.03$, $0.094 < B_{95} < 0.231$.[1] This serial indirect effect remained significant when tested separately within each song order, and when controlling for positive affect (see Appendix S1). Nostalgia plausibly increased MIL via social connectedness and self-continuity.

Experiment 4: Nostalgia-Induced Social Connectedness, Via Self-Continuity, Increases Meaning in Life: A Between-Subjects Test of the Full Mediational Sequence

In Experiment 4, we examined the replicability of Experiment 3 results, thus re-testing H3 (nostalgia ⇒ social connectedness ⇒ self-continuity ⇒ MIL). We manipulated nostalgia, this time as a between-subjects variable. Albeit less powerful, such a design can provide responses that are less likely influenced by anchoring and demand characteristics (Greenwald, 1976). Subsequently, we assessed social connectedness, self-continuity, and MIL, as well as negative affect, among Dutch community members recruited via a popular radio program.

Method

Participants and design. Participants were 664 residents of The Netherlands (345 women, 319 men), who ranged in age between 14 and 67 years ($M = 45.60$, $SD = 11.32$). They were recruited from the same website as in Experiment 3. They listened either to a nostalgic song or a control song. We relied on the same data set as Study 3 of Cheung et al. (2013). These researchers reported social connectedness, but only in showcasing its mediation of optimism. The researchers were not concerned with, and did not analyze, self-continuity or MIL. Participants did not receive a reward.

Materials and procedure. We recruited participants during December 2011 and January 2012. We used the same songs as in Experiment 3. We also used the same measures (and response scales) as in the prior experiment for: manipulation check (Cronbach's $\alpha = .80$), social connectedness (Cronbach's $\alpha = .87$), self-continuity (Cronbach's $\alpha = .72$), MIL (Cronbach's $\alpha = .95$), and positive affect (Cronbach's $\alpha = .86$). Finally, we assessed negative affect with two items (Hepper et al., 2012; Wildschut et al., 2006), asking whether the song made participants feel "sad" and "unhappy" (Cronbach's $\alpha = .82$).

Results and Discussion

We engaged in a series of one-way ANOVAs, before carrying out mediational analyses. We present correlations among variables in Table 3.

Nostalgia. Participants reported higher levels of nostalgia when they listened to the nostalgic ($M = 3.44$, $SD = 1.26$) than the control ($M = 2.58$, $SD = 1.17$) song, $F(1, 662) = 81.14$, $p < .001$, $= .11$. The manipulation was effective.

Social connectedness. Participants reported stronger social connectedness when they listened to the nostalgic ($M = 2.88$, $SD = 1.17$) than the control ($M = 2.32$, $SD = 1.13$) song, $F(1, 662) = 39.04$, $p < .001$, $\eta_p^2 = .06$. In replication of Experiment 3, nostalgia fostered social connectedness.

Self-continuity. Participants reported greater self-continuity when they listened to the nostalgic ($M = 3.17$, $SD = 1.11$) than the control ($M = 2.37$, $SD = 1.09$) song, $F(1, 662) = 87.49$, $p < .001$, $\eta_p^2 = .12$. In replication of Experiment 3, nostalgia strengthened self-continuity.

Meaning in life. Participants reported more MIL when they listened to the nostalgic ($M = 3.16$, $SD = 1.25$) than the control ($M = 2.52$, $SD = 1.29$) song, $F(1, 662) = 42.24$, $p < .001$, $\eta_p^2 = .06$. Replicating Experiment 3, nostalgia increased MIL.

Positive affect and negative affect. The nostalgic ($M = 2.86$, $SD = 1.05$) and control ($M = 2.72$, $SD = 1.07$) songs did not elicit different levels of positive affect, $F(1, 662) = 2.87$, $p = .091$, $\eta_p^2 = .004$. However, the nostalgic song ($M = 2.08$, $SD = 1.02$) elicited more negative affect than the control song ($M = 1.64$, $SD = 0.93$), $F(1, 662) = 33.30$, $p < .001$, $\eta_p^2 = .05$.

Mediational analysis. We tested the same hypothesized serial mediation (nostalgia ⇒ social connectedness ⇒ self-continuity ⇒ MIL) as in

[1]The mediation tool by Montoya and Hayes (2017) does not (yet) offer estimation of effect sizes. To obtain an effect-size estimate, we therefore also conducted mediation analyses separately within each song order. The effect sizes of the (significant) indirect effects for each order were $\beta_p = .14$ (nostalgic song is first) and $\beta_p = .17$ (nostalgic song is second).

Experiment 3 (Figure 2). The dummy coded song (0 = control, 1 = nostalgia) predicted social connectedness, which in turn predicted self-continuity, with self-continuity predicting MIL. Also, we included direct effects of song on self-continuity and MIL along with a direct effect of social connectedness on MIL, resulting in Hayes's (2012) PROCESS model 6.

Nostalgia, relative to control, fostered social connectedness, $B = 0.56$, $S_e = 0.09$, $t(662) = 6.25$, $p < .001$, $\eta_p^2 = .06$, which predicted greater self-continuity, $B = 0.67$, $S_e = 0.03$, $t(661) = 25.30$, $p < .001$, $\eta_p^2 = .49$; self-continuity was related to MIL, $B = 0.26$, $S_e = 0.04$, $t(660) = 6.89$, $p < .001$, $\eta_p^2 = .07$. The direct effect of song on self-continuity remained significant, $B = 0.42$, $S_e = 0.06$, $t(661) = 6.77$, $p < .001$, $\eta_p^2 = .07$, though not that of song on MIL, $B = 0.04$, $S_e = 0.06$, $t(660) = 0.72$, $p = .474$, $\eta_p^2 < .001$. Also, we found a significant partial association between social connectedness and MIL, $B = 0.70$, $S_e = 0.04$, $t(660) = 19.68$, $p < .001$, $\eta_p^2 = .37$. Finally, 5,000 bias-corrected and accelerated bootstraps confirmed the significant indirect effect of nostalgia on MIL through social connectedness and self-continuity, $B = 0.10$, $S_e = 0.03$, $0.05 < B_{95} < 0.15$, $\beta_p = 0.08$. This serial indirect effect remained significant when we controlled for affect (see Appendix S1). The results replicated those of Experiment 3, in support of H3.

General Discussion

Summary and Contribution

We were concerned with the role of self-continuity in accounting for why nostalgia increases MIL (Sedikides & Wildschut, 2018; Sedikides, Wildschut, Routledge, Arndt, Hepper, et al., 2015). We formulated, tested, and supported three hypotheses: that self-continuity strengthens MIL (H1, Experiment 1); that self-continuity mediates the effect of nostalgia on MIL (H2, Experiment 2); and that self-continuity's mediation of the nostalgia-MIL relation is itself plausibly based on social connectedness (H3, Experiment 3–4). We tested these hypotheses employing varied nostalgia inductions (event recall, songs), using different populations (students, community members), and involving both between- and within-subjects designs.

The findings contribute to several literature streams. To begin, the findings clarify why nostalgia increases MIL: It does so by fostering sequentially social connectedness and self-continuity. As such, the findings establish an intricate chain of mechanisms through which nostalgia renders life meaningful and further illustrate how nostalgia facilitates human functioning (Sedikides et al., 2016; Sedikides, Wildschut, Routledge, Arndt, Hepper, et al., 2015). By implication, nostalgia qualifies as a promising MIL intervention among populations or groups that are vulnerable to meaning-threats. For example, nostalgia may restore lack of meaning among politically disillusioned individuals (e.g., Hillary Clinton supporters in the 2016 US presidential elections or remain voters in the 2016 UK Brexit referendum; Maher, Igou, & Van Tilburg, 2018) or, more generally, among persons with chronic deficits in MIL (Chan et al., 2018; Van Tilburg et al., 2013).

Table 3. Correlations among variables (Experiment 4)

		1	2	3	4
1	Social connectedness	–			
2	Self-continuity	.72***	–		
3	Meaning in life	.57***	.62***	–	
4	Positive affect	.52***	.53***	.55***	–
5	Negative affect	.28***	.28***	.23***	−.02

***$p < .001$.

In addition, the findings enrich understanding of self-continuity. This construct has long been regarded as fundamental. For example, philosophers (James, 1890; Parfit, 1971; Wiggins, 2001) and psychologists (Erikson, 1968; Neisser, 1988; Vignoles, 2011) have considered self-continuity a prerequisite of identity, and self-continuity indeed acts as a synthesizer of human experience (Atchley, 1989; Troll & Skaff, 1997). Furthermore, self-continuity is linked to psychological adjustment benefits. It is positively related to subjective well-being (Ryan & Deci, 2001) and to the ability to cope adaptively with crises (e.g., job loss; Sadeh & Karniol, 2012), whereas it is inversely related to anxiety (Chandler, Lalonde, Sokol, & Hallett, 2003) and psychopathology (Lampinen, Odegard, & Leding, 2004). Our findings indicate that self-continuity is not only linked to MIL (Vignoles et al., 2006), but it also confers MIL, and, further, is part of a critical chain through which nostalgia confers MIL. By implication, self-continuity may have intervention potential, as it could be promoted through nostalgia among people coping with discontinuity in their lives, such as immigrants, first-year university or boarding-students, or families characterized by generational differences (Ogbu, 1982; Rutter, 1998; Sedikides et al., 2004).

Experimental-Causal-Chain Design

We tested our proposed mediation sequence using a mixture of experimental-causal-chain designs (Spencer et al., 2005) and measurement-of-mediation designs (Hayes, 2013). Specifically, we provided evidence for the following causal paths: self-continuity ⇒ MIL (Experiment 1), nostalgia ⇒ social-connectedness (Experiments 3–4), nostalgia ⇒ self-continuity (Experiments 2–4), and nostalgia ⇒ MIL (Experiment 2–4). Based on these findings alone, we can assume the following orderings of our four variables: (i) nostalgia has a causal effect on social connectedness, and (ii) self-continuity has a causal effect on MIL. In addition, prior evidence supports (iii) a causal effect of social connectedness on self-continuity (Sedikides et al., 2016; Experiment 4). Our theoretical model (i.e., nostalgia ⇒ social-connectedness ⇒ self-continuity ⇒

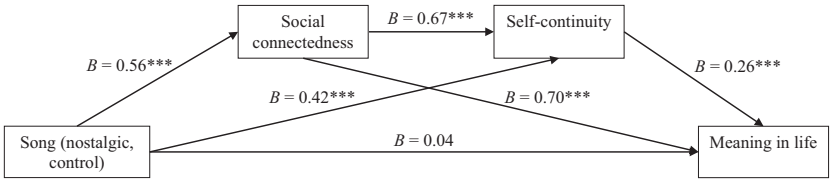

Fig. 2: Mediational sequence (Nostalgia ⇒ Social connectedness ⇒ Self-continuity ⇒ Meaning in life) in Experiment 4. ***$p < .001$

MIL), then, represents an integration of the above-mentioned causal links (i.e., 1–3). However, given that the causal effect of social connectedness on self-continuity has only been tested in one experiment so far (Sedikides et al., 2016, Experiment 4), we express caution in this proposed causal direction. Future experiments will do well to replicate this particular causal relation.

Positive Affect and Negative Affect

In Experiments 2–4, nostalgia had no influence on positive affect and negative affect. Several other experiments have reported similar results (e.g., Cheung et al., Study 3; Zhou, Wildschut, Sedikides, Shi, & Feng, 2012; Studies 2–4; Stephan et al., 2014; Studies 4–5), although, more often than not, nostalgia leads to positive affect, but has little influence on negative affect (for reviews, see: Sedikides & Wildschut, 2016; Sedikides, Wildschut, Routledge, Arndt, Hepper, et al., 2015). A meta-analysis is needed to establish conclusively the influence of nostalgia on affect.

The literature has indicated that nostalgia increases MIL after controlling for affect (Sedikides & Wildschut, 2016). We were therefore confident that the hypothesized impact of nostalgia on MIL would occur above and beyond affect. Regardless, we carried out analyses both before and after controlling for positive affect and negative affect (Experiments 2–4; see Appendix S1). Our hypotheses were supported.

Implications

We defined MIL in accordance with recent conceptualizations, that is, in terms of life coherence, purposefulness, and significance (King et al., 2016; Krause & Hayward, 2014). Preliminary evidence, though, points to the discriminability of these three facets of MIL (Martela & Steger, 2016). Future work could reassess the role of the documented mediational sequence, in order to find out if self-continuity is likely to emerge as a more potent mediator of one facet of MIL (e.g., coherence) relative to others. Relatedly, there may be complementary paths of influence of nostalgia on MIL when examining the components of coherence, purposefulness, and significance separately. For example, a sense of significance or worth may be strongly derived from positive social relations with others, such as social connectedness (Mahadevan, Gregg, & Sedikides, 2018; Mahadevan, Gregg, Sedikides, & de Waal-Andrews, 2016; Stavrova & Luhmann, 2016).

Nostalgia grants other psychological benefits besides MIL. For example, it strengthens inspiration (Stephan et al., 2015), increases optimism (Cheung et al., 2013; Kersten et al., 2016), reinforces perceptions of authenticity (Stephan, Sedikides, & Wildschut, 2012), and boosts creativity (Van Tilburg, Sedikides, & Wildschut, 2015). A task of future research could be to examine whether nostalgia exerts these effects, in part, by strengthening self-continuity. Future research would also do well to examine other forms of self-continuity above and beyond a sense of connection between one's past and one's present. Continuity between one's present and one's future (Peetz & Wilson, 2008) is a case in point. This form of self-continuity predicts accumulation of financial assets (Ersner-Hershfield, Garton, Ballard, Samanez-Larkin, & Knutson, 2009) and longevity among older adults (Fry & Debats, 2011). Does nostalgia predict such monetary or physical health benefits, and does it do so by augmenting perceived continuity between one's present and one's future?

In Experiment 2, we adopted a snowball sampling technique for methodological and practical reasons. In particular, we aimed for a large sample that extended beyond university students. The snowball technique helped us achieve our aim in a relatively low population density community of the Irish South West. We acknowledge a potential downside of the snowball technique, namely, that participant recruitment is not random (although assignment to conditions was).

Lastly, our work tested Western samples (i.e., American, Irish, Dutch). Given the panculturality of nostalgia (Hepper et al., 2014; Sedikides, Wildschut, Routledge, Arndt, & Zhou, 2009; Zou, Wildschut, Cable, & Sedikides, 2018), we would expect our findings to replicate in other cultures as well, a proposition that needs empirical verification. Furthermore, such cross-cultural examinations may want to take into account potential differences in the links among social connectedness and self-continuity with MIL, especially given the relative paucity in cross-cultural investigations on the precursors and components of MIL. Such investigations could clarify whether culture moderates the potency of the links among these variables.

Coda

We aimed to explicate the relation between nostalgia and MIL. Earlier research established that nostalgia increases MIL, but the underlying processes remained elusive. In four experiments, we tested the intervening roles of social connectedness and self-continuity in the relation between nostalgia and MIL. We found that

nostalgia fosters social connectedness, which plausibly heightens self-continuity, which in turn strengthens MIL. The findings elucidate the intricate pathways through which nostalgia makes life more meaningful.

Conflict of Interest

The authors declare that they have no conflicts of interest. All procedures performed involving human participants were in accordance with the ethical standards of the APA Code of Conduct as well as authors' national ethics guidelines.

Supporting Information

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

References

Abeyta, A., Routledge, C., Roylance, C., Wildschut, R. T., & Sedikides, C. (2015). Attachment-related avoidance and the social and agentic content of nostalgic memories. *Journal of Social and Personal Relationships*, *32*, 406–413. https://doi.org/10.1177/0265407514533770

Aron, A., & Nardone, N. (2012). Self and close relationships. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (2nd ed., pp. 520–531). New York, NY: Guilford Press.

Atchley, R. (1989). A continuity theory of normal aging. *The Gerontologist*, *29*, 183–190. https://doi.org/10.1093/geront/29.2.183

Barrett, F. S., Grimm, K. J., Robins, R. W., Wildschut, T., Sedikides, C., & Janata, P. (2010). Music-evoked nostalgia: Affect, memory, and personality. *Emotion*, *10*, 390–403. https://doi.org/10.1037/a0019006

Batcho, K. I. (1995). Nostalgia: A psychological perspective. *Perceptual and Motor Skills*, *80*, 131–143. https://doi.org/10.2466/pms.1995.80.1.131

Batcho, K. I. (1998). Personal nostalgia, world view, memory, and emotionality. *Perceptual and Motor Skills*, *87*, 411–432. https://doi.org/10.2466/pms.1998.87.2.411

Batcho, K. I. (2007). Nostalgia and the emotional tone and content of song lyrics. *The American Journal of Psychology*, *120*, 361–381. doi: 10.2307/20445410

Berntsen, D., & Rubin, D. C. (2004). Cultural life scripts structure recall from autobiographical memory. *Memory & Cognition*, *32*, 427–442. https://doi.org/10.3758/bf03195836

Cavanaugh, J. C. (1989). I have this feeling about everyday memory aging. *Educational Gerontology*, *15*, 597–605. https://doi.org/10.1080/0380127890150604

Chan, C. S., Van Tilburg, W. A. P., Igou, E. R., Poon, C. Y., Tam, K. Y., Wong, V. U., & Cheung, S. K. (2018). Situational meaninglessness and state boredom: Cross-sectional and experience-sampling findings. *Motivation and Emotion*, *42*, 555–565. https://doi.org/10.1007/s11031-018-9693-3

Chandler, M. J., Lalonde, C. E., Sokol, B. W., & Hallett, D. (2003). Personal persistence, identity development and suicide: A study of native and non-native North American adolescents. *Monographs of the Society for Research in Child Development*, *68*(2), vii–viii, Series No. 273.

Cheung, W. Y., Wildschut, T., Sedikides, C., Hepper, E. G., Arndt, J., & Vingerhoets, A. J. J. M. (2013). Back to the future: Nostalgia increases optimism. *Personality and Social Psychology Bulletin*, *39*, 1484–1496. https://doi.org/10.1177/0146167213499187

D'Argembeau, A., Feyers, D., Majerus, S., Collette, F., Van der Linden, M., Maquet, P., & Salmon, E. (2008). Self-reflection across time: Cortical midline structures differentiate between past and present selves. *Social Cognitive and Affective Neuroscience*, *3*, 244–252. https://doi.org/10.1093/scan/nsn020

Davis, F. (1979). *Yearning for yesterday: A sociology of nostalgia*. New York, NY: The Free Press.

Diehl, M., Jacobs, L. M., & Hastings, C. T. (2006). Temporal stability and authenticity of self-representations in adulthood. *Journal of Adult Development*, *13*, 10–22. https://doi.org/10.1007/s10804-006-9001-4

Erikson, E. (1968). *Identity: Youth and crisis*. New York, NY: Norton.

Ersner-Hershfield, H., Garton, M. T., Ballard, K., Samanez-Larkin, G. R., & Knutson, B. (2009). Don't stop thinking about tomorrow: Individual differences in future self-continuity account for saving. *Judgment and Decision Making*, *4*, 280–286. https://doi.org/PMC2747683

Fry, P. S., & Debats, D. L. (2011). Cognitive beliefs and future time perspectives: Predictors of mortality and longevity. *Journal of Aging Research*, *2011*, 1–13. https://doi.org/10.4061/2011/367902

Greenwald, A. G. (1976). Within-subjects designs: To use or not to use? *Psychological Bulletin*, *83*, 314–320. https://doi.org/10.1037/0033-2909.83.2.314

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, *76*, 408–420. https://doi.org/10.1080/03637750903310360

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis. A regression-based approach*. New York, NY: Guilford.

Hepper, E. G., Ritchie, T. D., Sedikides, C., & Wildschut, T. (2012). Odyssey's end: Lay conceptions of nostalgia reflect its original Homeric meaning. *Emotion*, *12*, 102–119. https://doi.org/10.1037/a0025167

Hepper, E. G., Wildschut, T., Sedikides, C., Ritchie, T. D., Yung, Y.-F., Hansen, N., … Zhou, X. (2014). Pancultural nostalgia: Prototypical conceptions across cultures. *Emotion*, *14*, 733–747. https://doi.org/10.1037/a0036790 https://doi.org/10.1037/a0036790

Hepper, E. G., Wildschut, T., Sedikides, C., Robertson, S., & Routledge, C. (2018). *The time capsule: Nostalgia shields well-being from limited time horizons*, Manuscript under review.

Hertz, D. G. (1990). Trauma and nostalgia: New aspects of the coping of aging Holocaust survivors. *Israeli Journal of Psychiatry and Related Sciences*, *27*, 189–198. https://doi.org/1991-21355-001

Holak, S. L., & Havlena, W. J. (1992). Nostalgia: An exploratory study of themes and emotions in the nostalgic experience. *Advances in Consumer Research*, *19*, 380–386.

Holak, S. L., & Havlena, W. J. (1998). Feelings, fantasies, and memories: An examination of the emotional

components of nostalgia. *Journal of Business Research*, *42*, 217–226. https://doi.org/10.1016/s0148-2963(97)00119-7

James, W. (1890). *The principles of psychology* (Vol. *1*). London, UK: Macmillan.

Kersten, M., Cox, C. R., & van Enkevort, E. A. (2016). An exercise in nostalgia: Nostalgia promotes health optimism and physical activity. *Psychology and Health*, *31*, 1166–1181. https://doi.org/10.1080/08870446.2016.1185524

King, L. A., Heintzelman, S. J., & Ward, S. J. (2016). Beyond the search for meaning: A contemporary science of the experience of meaning in life. *Current Directions in Psychological Science*, *25*, 211–216. https://doi.org/10.1177/0963721416656354

Krause, N., & Hayward, R. D. (2014). Assessing stability and change in a second-order confirmatory factor model of meaning in life. *Journal of Happiness Studies*, *15*, 237–253. https://doi.org/10.1007/s10901-013-9418-y

Lampinen, J. M., Odegard, T. N., & Leding, J. K. (2004). Diachronic disunity. In D. R. Beike, J. M. Lampinen, & D. A. Behrend (Eds.), *The self in memory* (pp. 227–253). New York, NY: Psychology Press. https://doi.org/10.4324/9780203337974

Landau, M. J., Greenberg, J., Sullivan, D., Routledge, C., & Arndt, J. (2009). The protective identity: Evidence that mortality salience heightens the clarity and coherence of the self-concept. *Journal of Experimental Social Psychology*, *45*, 796–807. https://doi.org/10.1016/j.jesp.2009.05.013

Landau, M. J., Meier, B. P., & Keefer, L. A. (2010). A metaphor enriched social cognition. *Psychological Bulletin*, *136*, 1045–1067. https://doi.org/10.1037/a0020970

Mackinnon, A., Jorm, A. F., Christensen, H., Korten, A. E., Jacomb, P. A., & Rodgers, B. (1999). A short form of the Positive and Negative Affect Schedule: Evaluation of factorial validity and invariance across demographic variables in a community sample. *Personality and Individual Differences*, *27*, 405–416. https://doi.org/10.1016/s0191-8869(98)00251-7

Mahadevan, N., Gregg, A. P., & Sedikides, C. (2018). Is self-regard a sociometer or a hierometer? Self-esteem tracks status and inclusion, narcissism tracks status. *Journal of Personality and Social Psychology*. https://doi.org/10.1037/pspp0000189

Mahadevan, N., Gregg, A. P., Sedikides, C., & de Waal-Andrews, W. G. (2016). Winners, losers, insiders, and outsiders: Comparing hierometer and sociometer theories of self-regard. *Frontiers in Psychology*, *7*, 1–19. https://doi.org/10.3389/fpsyg.2016.00334

Maher, P. J., Igou, E. R., & Van Tilburg, W. A. P. (2018). Brexit, Trump, and the polarizing effect of disillusionment. *Social Psychological and Personality Science*, *9*, 205–213. https://doi.org/10.1177/1948550617750737

Martela, F., & Steger, M. F. (2016). The three meanings of meaning in life: Distinguishing coherence, purpose, and significance. *The Journal of Positive Psychology*, *11*, 531–545. https://doi.org/10.1080/17439760.2015.1137623

McLean, K. C., Pasupathi, M., & Pals, J. L. (2007). Selves creating stories creating selves: A process model of self-development. *Personality and Social Psychology Review*, *11*, 262–278. https://doi.org/10.1177/1088868307301034

Montoya, A. K., & Hayes, A. F. (2017). Two condition within-participant statistical mediation analysis: A path-analytic framework. *Psychological Methods*, *22*, 6–27. https://doi.org/10.1037/met0000086

Neisser, U. (1988). Five kinds of self-knowledge. *Philosophical Psychology*, *1*, 35–39. https://doi.org/10.1080/09515088808572

Ogbu, J. U. (1982). Cultural discontinuities and schooling. *Anthropology & Education Quarterly*, *13*, 290–307. https://doi.org/10.1525/aeq.1982.13.4.05x1505w

Parfit, D. (1971). Personal identity. *Philosophical Review*, *80*, 3–27. https://doi.org/10.2307/2184309

Pearsall, J. (Ed.) (1998). *The New Oxford Dictionary of English*. Oxford, UK: Oxford University Press.

Peetz, J., & Wilson, A. E. (2008). The temporally extended self: The relation of past and future selves to current identity, motivation, and goal pursuit. *Social and Personality Psychology Compass*, *2*, 2090–2106. https://doi.org/10.1111/j.1751-9004.2008.00150.x

Reid, C. A., Green, J. D., Wildschut, T., & Sedikides, C. (2015). Scent-evoked nostalgia. *Memory*, *23*, 157–166. https://doi.org/10.1080/09658211.2013.876048

Rosch, E. (1978). Principles of categorization. In E. Rosch & B. B. Lloyd (Eds.), *Cognition and categorization* (pp. 27–48). Hillsdale, NJ: Erlbaum.

Routledge, C., Arndt, J., Wildschut, T., Sedikides, C., Hart, C., Juhl, J., … Scholtz, W. (2011). The past makes the present meaningful: Nostalgia as an existential resource. *Journal of Personality and Social Psychology*, *101*, 638–652. https://doi.org/10.1037/a0024292

Routledge, C., Sedikides, C., Wildschut, T., & Juhl, J. (2013). Finding meaning in the past: Nostalgia as an existential resource. In K. Markman, T. Proulx, & M. Lindberg (Eds.), *The psychology of meaning* (pp. 297–316). Washington, DC: American Psychological Association. https://doi.org/10.1037/14040-000

Routledge, C., Wildschut, T., Sedikides, C., Juhl, J., & Arndt, J. (2012). The power of the past: Nostalgia as a meaning-making resource. *Memory*, *20*, 452–460. https://doi.org/10.1080/09658211.2012.677452

Rutter, M. (1998). Some research considerations on intergenerational continuities and discontinuities: Comment on the special section. *Developmental Psychology*, *34*, 1269–1273. https://doi.org/0.1037/0012-1649.34.6.1269

Ryan, R. M., & Deci, E. L. (2001). To be happy or to be self-fulfilled: A review of research on hedonic and eudaimonic wellbeing. *Annual Review of Psychology*, *52*, 141–166. https://doi.org/10.1146/annurev.psych.52.1.141

Sadeh, N., & Karniol, R. (2012). Sense of self-continuity as a resource in adaptive coping with job loss. *Journal of Vocational Behavior*, *80*, 93–99. https://doi.org/10.1016/j.jvb.2011.04.009

Sedikides, C., Cheung, W. Y., Wildschut, T., Hepper, E. G., Baldursson, E., & Pedersen, B. (2018). Nostalgia motivates pursuit of important goals by increasing meaning in life. *European Journal of Social Psychology*, *48*, 209–216. https://doi.org/10.1002/ejsp.2318

Sedikides, C., & Wildschut, T. (2016). Nostalgia: A bittersweet emotion that confers psychological health benefits. In A. M. Wood & J. Johnson (Eds.), *Wiley handbook of positive clinical psychology* (pp. 25–136). Hoboken, NJ: Wiley.

Sedikides, C., & Wildschut, T. (2018). Finding meaning in nostalgia. *Review of General Psychology*, *22*, 48–61. https://doi.org/10.1037/gpr0000109

Sedikides, C., Wildschut, T., & Baden, D. (2004). Nostalgia: Conceptual issues and existential functions. In J. Greenberg, S. Koole, & T. Pyszczynski (Eds.), *Handbook of experimental existential psychology* (pp. 200–214). New York, NY: Guilford Press.

Sedikides, C., Wildschut, T., Cheung, W.-Y., Routledge, C., Hepper, E. G., Arndt, J., … Vingerhoets, A. J. J. M. (2016). Nostalgia fosters self-continuity: Uncovering the mechanism (social connectedness) and the consequence (eudaimonic well-being). *Emotion*, *16*, 524–539. https://doi.org/10.1037/emo0000136

Sedikides, C., Wildschut, T., Gaertner, L., Routledge, C., & Arndt, J. (2008). Nostalgia as enabler of self-continuity. In F. Sani (Ed.), *Self-continuity: Individual and collective perspectives* (pp. 227–239). New York, NY: Psychology Press.

Sedikides, C., Wildschut, T., Routledge, C., & Arndt, J. (2015). Nostalgia counteracts self-discontinuity and restores self-continuity. *European Journal of Social Psychology*, *45*, 52–61. https://doi.org/10.1002/ejsp.2073

Sedikides, C., Wildschut, T., Routledge, C., Arndt, J., Hepper, E. G., & Zhou, X. (2015). To nostalgize: Mixing memory with affect and desire. *Advances in Experimental Social Psychology*, *51*, 189–273. https://doi.org/10.1016/bs.aesp.2014.10.001

Sedikides, C., Wildschut, T., Routledge, C., Arndt, J., & Zhou, X. (2009). Buffering acculturative stress and facilitating cultural adaptation: Nostalgias as a psychological resource. In R. S. Wyer Jr, C.-Y. Chiu, & Y.-Y. Hong (Eds.), *Understanding culture: Theory, research, and application* (pp. 361–378). New York, NY: Psychology Press.

Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, *89*, 845–851. https://doi.org/10.1037/0022-3514.89.6.845

Stavrova, O., & Luhmann, M. (2016). Social connectedness as a source and consequence of meaning in life. *Journal of Positive Psychology*, *11*, 470–479. https://doi.org/10.1080/17439760.2015.1117127

Stephan, E., Sedikides, C., & Wildschut, T. (2012). Mental travel into the past: Differentiating recollections of nostalgic, ordinary, and positive events. *European Journal of Social Psychology*, *42*, 290–298. https://doi.org/10.1002/ejsp.1865

Stephan, E., Sedikides, C., Wildschut, T., Cheung, W. Y., Routledge, C., & Arndt, J. (2015). Nostalgia-evoked inspiration: Mediating mechanisms and motivational implications. *Personality and Social Psychology Bulletin*, *41*, 1395–1410. https://doi.org/10.1177/0146167215596985

Stephan, E., Wildschut, T., Sedikides, C., Zhou, X., He, W., Routledge, C., … Vingerhoets, A. J. J. M. (2014). The mnemonic mover: Nostalgia regulates avoidance and approach motivation. *Emotion*, *14*, 545–561. https://doi.org/10.1037/a0035673

Troll, L. E., & Skaff, M. M. (1997). Perceived continuity of self in very old age. *Psychology and Aging*, *12*, 162–169. https://doi.org/10.1037/0882-7974.12.1.162

Van Tilburg, W. A. P., Bruder, M., Wildschut, T., Sedikides, C., & Göritz, A. S. (2018). An appraisal profile of nostalgia. Advance online publication. https://doi.org/10.1037/emo0000417

Van Tilburg, W. A. P., & Igou, E. R. (2013). On the meaningfulness of behavior: An expectancy *x* value approach. *Motivation and Emotion*, *37*, 373–388. https://doi.org/10.1007/s11031-012-9316-3

Van Tilburg, W. A. P., Igou, E. R., & Sedikides, C. (2013). In search of meaningfulness: Nostalgia as an antidote to boredom. *Emotion*, *13*, 450–461. https://doi.org/10.1037/a0030442

Van Tilburg, W. A. P., Sedikides, C., & Wildschut, T. (2015). The mnemonic muse: Nostalgia fosters creativity through openness to experience. *Journal of Experimental Social Psychology*, *59*, 1–7. https://doi.org/10.1016//j.jesp.2015.02.002

Van Tilburg, W. A. P., Sedikides, C., & Wildschut, T. (2018). Adverse weather evokes nostalgia. *Personality and Social Psychology Bulletin*, *44*, 984–995. https://doi.org/10.1177/0146167218756030

Van Tilburg, W. A. P., Wildschut, T., & Sedikides, C. (2017). Nostalgia's place among self-relevant emotions. *Cognition and Emotion*. Advance online publication. https://doi.org/10.1080/02699931.2017.1351331

Vess, M., Arndt, J., Routledge, C., Sedikides, C., & Wildschut, T. (2012). Nostalgia as a resource for the self. *Self and Identity*, *3*, 273–284. https://doi.org/10.1080/15298868.2010.521452

Vignoles, V. L. (2011). Identity motives. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 403–432). New York, NY: Springer. https://doi.org/10.1007/978-1-4419-7988-9

Vignoles, V. L., Regalia, C., Manzi, C., Golledge, J., & Scabini, E. (2006). Beyond self-esteem: Influence of multiple motives on identity construction. *Journal of Personality and Social Psychology*, *90*, 308–333. https://doi.org/10.1037/0022-3514.90.2.308

Wallace, H. M., & Tice, D. M. (2012). Reflected appraisal through a 21st-century looking glass. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (2nd ed., pp. 124–140). New York, NY: Guilford Press.

Wiggins, D. (2001). *Sameness and substance renewed*. Cambridge, UK: Cambridge University Press. https://doi.org/10.1017/cbo9780511612756

Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nostalgia: Content, triggers, functions. *Journal of Personality and Social Psychology*, *91*, 975–993. https://doi.org/10.1037/0022-3514.91.5.975

Wildschut, T., Sedikides, C., Routledge, C., Arndt, J., & Cordaro, P. (2010). Nostalgia as a repository of social connectedness: The role of attachment-related avoidance. *Journal of Personality and Social Psychology*, *98*, 573–586. https://doi.org/10.1037/0022-3514.91.5.975

Zhou, X., Sedikides, C., Wildschut, C., & Gao, D.-G. (2008). Counteracting loneliness: On the restorative function of nostalgia. *Psychological Science*, *19*, 1023–1029. https://doi.org/10.1111/j.1467-9280.2008.02194

Zhou, X., Wildschut, T., Sedikides, C., Shi, K., & Feng, C. (2012). Nostalgia: The gift that keeps on giving. *Journal of Consumer Research*, *39*, 39–50. https://doi.org/10.1086/662199

Zou, X., Wildschut, T., Cable, D., & Sedikides, C. (2018). Nostalgia for host culture facilitates repatriation success: The role of self-continuity. *Self and Identity*, *17*, 327–342. https://doi.org/10.1080/15298868.2017.1378123