



# Nostalgia confers psychological wellbeing by increasing authenticity<sup>☆</sup>

Nicholas J. Kelley<sup>a,\*</sup>, William E. Davis<sup>b</sup>, Jianning Dang<sup>c</sup>, Li Liu<sup>c</sup>, Tim Wildschut<sup>a</sup>,  
Constantine Sedikides<sup>a</sup>

<sup>a</sup> School of Psychology, University of Southampton, UK

<sup>b</sup> Department of Psychology, Wittenberg University, USA

<sup>c</sup> Faculty of Psychology, Beijing Normal University, China

## ARTICLE INFO

### Keywords:

Nostalgia  
Authenticity  
Psychological wellbeing  
Meaning in life  
Autonomy

## ABSTRACT

Nostalgia, a sentimental longing for one's past, predicts or augments psychological wellbeing (PWB). We hypothesized that it does so—at least in part—via authenticity, a sense of alignment with one's true self. We obtained support for this hypothesis in four studies. Using a measurement-of-mediation design, across a Western (United States) and East-Asian (China) culture, we found that nostalgia is associated with both authenticity and PWB, and that the nostalgia-PWB link is mediated by authenticity (Study 1,  $N = 611$ ). Using an experimental-causal-chain design, we showed that nostalgia increases authenticity across U.S. and Chinese samples (Study 2,  $N = 777$ ). We then demonstrated that authenticity increases PWB on a domain-general measure (Study 3,  $N = 596$ , U.S. sample). Finally, we clarified that the benefits authenticity confers on PWB are domain general rather than domain specific (Study 4,  $N = 414$ , U.K. sample). This research represents the first attempt to address systematically the path from nostalgia to PWB via authenticity. We discuss implications for the broader literature.

Nostalgia is a sentimental longing for one's past (Pearsall, 1998). It first emerged as a central theme in Homer's *Odyssey*, motivating Odysseus on his perilous homeward journey after the fall of Troy. Odysseus is the archetypal hero (Campbell, 1949), who ventures into the unknown and gains insights into his authentic self. This newfound sense of authenticity, nurtured by nostalgia, literally and metaphorically propels him home. Odysseus' tale has been a cornerstone of Western culture for the 2800 years since its inception, shaping music (Cream's *Tales of Brave Ulysses*, Symphony X's *The Odyssey*), literature (J.R.R. Tolkien's *The Hobbit*, James Joyce's *Ulysses*), cinema (Joel and Ethan Cohen's *O Brother, Where Art Thou?*, Alain Cavalier's *Paradise*), and television (episodes from *Lost*, *The Simpsons*, and *The Twilight Zone*), to mention a few contemporary examples. Much like Odysseus' voyage, individuals' present-day lives are filled with nostalgic reverie that confers psychological wellbeing (PWB). But what is the role of authenticity in this process? Here, we examine the implications of nostalgia for authenticity and its downstream consequences for PWB.

## 1. Nostalgia and psychological wellbeing

Nostalgia typically pertains to momentous events from one's past (e.g., anniversaries, birthdays, graduations) shared with close others (e.g., family members, partners, friends; Batcho, 2007; Wildschut et al., 2006). As such, nostalgia is bittersweet (Leunissen et al., 2021; Turner & Stanley, 2021), although more sweet than bitter. In particular, nostalgia entails warmth, tenderness, contentment, and joy, but also a measure of yearning and sadness for the irredeemable passing of valued moments (Batcho, 1995; Hepper et al., 2012; Sedikides & Wildschut, 2016). The emotion occurs frequently (i.e., several times a week; Hepper et al., 2021; Wildschut et al., 2006) and across cultures (Hepper et al., 2014; Wildschut et al., 2019) as well as ages (Juhl et al., 2020; Madoglou et al., 2017).

One of the hallmarks of nostalgia is increased PWB (Hepper et al., 2021; Routledge et al., 2013; Sedikides et al., 2015). PWB is a multi-dimensional construct comprising a constellation of interrelated domains. According to Su et al. (2014), PWB encompasses: (1) flourishing social relationships, (2) subjective vitality, (3) a sense of competence,

<sup>☆</sup> This paper has been recommended for acceptance by Rachael Jack.

\* Corresponding author at: Center for Research on Self and Identity, School of Psychology, University of Southampton, B44 University Rd, Southampton SO17 1BJ, United Kingdom.

E-mail address: [N.J.Kelley@soton.ac.uk](mailto:N.J.Kelley@soton.ac.uk) (N.J. Kelley).

<https://doi.org/10.1016/j.jesp.2022.104379>

Received 7 March 2022; Received in revised form 2 June 2022; Accepted 17 June 2022

Available online 29 June 2022

0022-1031/© 2022 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

(4) feelings of autonomy, (5) the perception of life as meaningful, (6) an optimistic view of one's future, and (7) subjective wellbeing. Below, we highlight research demonstrating associations between nostalgia and each of these seven PWB domains.

### 1.1. Nostalgia and social relationships

Humans have a fundamental need to form and maintain close relationships (Baumeister & Leary, 1995). Such relationships are prominently featured in nostalgic recollection (Sedikides & Wildschut, 2019), suggesting that nostalgizing facilitates their development and maintenance (Abeyta et al., 2015). This suggestion is empirically supported, as nostalgia is associated with social support seeking (Batcho, 2013), and experimentally-induced nostalgia increases the perceived capacity to provide support (Wildschut et al., 2010, Study 5). Also, nostalgizing about prior encounters with outgroup members solidifies trust of outgroup members in the present (Turner et al., 2012, 2018). Further, nostalgia is triggered by loneliness (Wildschut et al., 2006), and helps combat loneliness by increasing social approach motivation (Abeyta et al., 2020), perceived social support (Zhou et al., 2008), or happiness (Zhou et al., 2022). Lastly, nostalgia is associated with belongingness (Seehusen et al., 2013), deficits in belongingness trigger nostalgia (Seehusen et al., 2013), and experimentally-induced nostalgia augments belongingness (Baldwin & Landau, 2014).

### 1.2. Nostalgia and subjective vitality

Subjective vitality (hereafter: vitality) refers to “one's conscious experience of possessing energy and aliveness” (Ryan & Frederick, 1997, p. 530). It is a signature of eudemonic (meaning-focused) rather than hedonic (pleasure-focused) wellbeing (Ryan & Deci, 2001). In a recent multi-week nostalgia intervention study, nostalgia did not predict vitality (Layous et al., 2021). Three experiments have examined the effect of nostalgia on vitality. In one, nostalgia increased vitality, especially for those with meaning deficits (Routledge et al., 2011, Study 5). In another, nostalgia strengthened vitality, an effect serially mediated by social connectedness (a sense of acceptance and belongingness) and self-continuity (Sedikides et al., 2016, Study 6). In the third experiment, participants who nostalgized about video gaming experiences from their childhood (vs. adulthood) reported greater vitality (Wulf et al., 2020).

### 1.3. Nostalgia and competence

Nostalgia is linked to competence—a sense of mastery in one's activities (Ryan & Deci, 2017). When reflecting on their childhood homes, participants' competence in that space is positively associated with nostalgia (Weinstein et al., 2013). Also, when reflecting on childhood video games, perceptions of competence within those games are positively associated with nostalgia for the games (Wulf et al., 2020). Moreover, in the context of interpersonal relationships, nostalgizing increases perceptions of social competence (Abeyta et al., 2015, Studies 6–7; Wildschut et al., 2006, Study 7). Lastly, when the need for competence is thwarted (via negative performance feedback), nostalgia buffers against defensive responding (i.e., self-serving bias; Vess et al., 2012).

### 1.4. Nostalgia and autonomy

Autonomy refers to the experience of volition and self-directedness, “... the self-endorsement of actions” (Ryan & Ryan, 2019, p. 100). Weinstein et al. (2022) recently addressed the association between autonomy-rich memories and nostalgia. In a multi-wave daily diary study, these authors reported that daily experiences characterized by high levels of autonomy elicited more nostalgia when recalled two

months later. The content of nostalgic recollections, then, is autonomy-rich. This finding is consistent with our proposition that nostalgizing may facilitate autonomy.

### 1.5. Nostalgia and meaning in life

Nostalgia, an existential resource, is a wellspring of meaning in life (Sedikides & Wildschut, 2018). Routledge et al. (2011) reported that dispositional and situationally-evoked nostalgia are associated with and lead to greater meaning in life, findings that have been replicated directly and conceptually (Baldwin & Landau, 2014; Evans et al., 2021; Layous et al., 2021; Reid et al., 2015; Routledge et al., 2012; Sedikides et al., 2018; Van Tilburg et al., 2019). Additionally, nostalgia buffers against the negative aftereffects of meaning threats, including mortality awareness (Routledge et al., 2008, 2014), boredom (Van Tilburg et al., 2013), and absurdist art (Routledge et al., 2012).

### 1.6. Nostalgia and optimism

Nostalgia is related to and engenders optimism. Dispositional nostalgia is positively related to dispositional optimism (Biskas et al., 2019). Further, Cheung et al. (2013) content-analyzed participants' narratives about past events and observed that optimism was more strongly expressed in narratives about nostalgic (vs. ordinary) events (Study 1). In subsequent studies, nostalgic (vs. control) participants reported feeling more optimistic about the future (Studies 2–3). This effect has been replicated and extended. For example, nostalgia induced with a different method (i.e., via scents) is positively associated with optimism (Reid et al., 2015). Also, nostalgizing increases optimism about one's physical health (Abeyta & Routledge, 2016; Kersten et al., 2016).

### 1.7. Nostalgia and subjective wellbeing

Subjective wellbeing (Diener, 2000), a general sense of how well one's life is going, is conceptualized as high life satisfaction and positive affect (Su et al., 2014). A fair amount of research has reported positive associations between dispositional nostalgia and trait positive affect (Baldwin et al., 2015, Study 7; Bryant et al., 2005; Zhou et al., 2022; Zimbardo & Boyd, 1999). Nostalgia inductions (Cox et al., 2015; Hotchin, 2020; Leunissen et al., 2021; Zhou et al., 2022) and nostalgia interventions (Layous et al., 2021) also increase positive affect. Less research has examined how nostalgia relates to and influences life satisfaction (including happiness). In five correlational studies, nostalgia was associated with greater life satisfaction (Baldwin et al., 2015, Study 7; Luo et al., 2022; Zhou et al., 2022, Studies 1–3), and a nostalgia intervention positively influenced life satisfaction after a six-week period, whereas in an experience sampling study results were mixed (Newman et al., 2020, Study 4). Further, participants who viewed nostalgic (vs. control) websites reported higher life satisfaction (Cox et al., 2015, Study 3), and induced nostalgia raised life satisfaction (Ye et al., 2018; Zhou et al., 2022, Studies 4–6).

### 1.8. Summary

The literature suggests that nostalgia at both trait and state (induced) levels broadly confers PWB, and specifically influences social relationships, vitality, competence, autonomy, meaning in life, optimism, and subjective wellbeing. We propose that these effects are driven, at least in part, by authenticity.

## 2. Nostalgia and authenticity

We define authenticity as the sense that one is in alignment with

one's true self (Lenton, et al., 2013a). This emphasis on felt authenticity reflects recent advances in the literature (Chen, 2019; Rivera et al., 2019; Schmader & Sedikides, 2018; Sedikides et al., 2017; Sedikides et al., 2019; Vess, 2019). Content analysis of nostalgic narratives finds that nostalgic reverie is self-oriented and revolves around personally meaningful memories. These narratives often follow a redemptive story arc such that negative experiences end with a positive conclusion (Wildschut et al., 2006). Thus, we propose that nostalgizing—by evoking personally important and formative past experiences—is associated with, and increases, felt authenticity.

Nascent experimental work has charted a causal pathway from nostalgia to authenticity. Stephan et al. (2012, Study 2) asked participants to reflect on a nostalgic, positive, or ordinary memory via the Event Reflection Task (Sedikides et al., 2015). Participants brought to mind a past event, listed four event-relevant keywords, and wrote a narrative describing the event. Subsequently, they completed a single-item assessment of authenticity (i.e., “to what extent does the described event reflect *the person you truly are*”). Participants who reflected on a nostalgic (vs. positive or ordinary) event reported higher authenticity. Similarly, Baldwin et al. (2015, Study 3) manipulated nostalgia via the Event Reflection Task (nostalgic vs. ordinary event), asking participants to write about themselves with a focus either on their intrinsic self (i.e., their goals, aspirations, self-descriptions) or everyday self (i.e., who they are in their day-to-day life). Nostalgic (vs. control) participants spent more time writing about themselves in the intrinsic-self condition relative to the everyday-self condition. Moreover, a content analysis of essays indicated that, after nostalgizing, participants in the intrinsic self (vs. everyday self) condition used more language reflecting cognitive elaboration. Nostalgia, then, enhanced the accessibility of the intrinsic self-concept (i.e., who one truly is), but not the everyday self-concept. In summary, nostalgic reflection connects people to experiences that carry large significance for their identity and who they truly are; the well-being benefits then flow from authenticity.

### 3. Authenticity and psychological wellbeing

According to our theoretical proposal, nostalgia is associated with or increases authenticity, and authenticity in turn is associated with or raises PWB. Indeed, authenticity is positively related to PWB. For example, authenticity is linked to such indicators of PWB as flourishing social relationships (Baker et al., 2017; Brunell et al., 2010), vitality (Tekin, 2014), competence (Heppner et al., 2008), autonomy (Heppner et al., 2008), meaning in life (Schlegel et al., 2009, 2011), optimism (Ionescu & Jacob, 2019), and subjective wellbeing (Goldman & Kernis, 2002; Kifer et al., 2013).

### 4. Overview

Prior studies have examined the path from nostalgia to PWB via authenticity in a piecemeal fashion. That is, one line of inquiry has focused on how nostalgia impacts authenticity, whereas another line of inquiry has focused on how authenticity relates to PWB. Our research represents the first attempt to test systematically the path from nostalgia to PWB via authenticity. Additionally, the literature has conceptualized PWB narrowly by examining domains independently of one another. Here, we take a holistic view of PWB (Su et al., 2014), allowing us to test whether the impact of nostalgia and authenticity on PWB is domain-general or domain-specific.

Across four studies (data and materials available on the Open Science Framework), we tested the hypothesis that authenticity mediates the effect of nostalgia on PWB. In Study 1, we did so using a measurement-of-mediation design across a Western (United States) and East-Asian (China) culture. In the following three studies, we proceeded with an experimental-causal-chain design, inspecting each step of the mediation chain (Spencer et al., 2005; see also Pirlott & MacKinnon, 2016). In Study 2, we tested the complete model by first manipulating nostalgia

and then measuring authenticity and PWB across U.S. and Chinese sample. Next, we experimentally manipulated authenticity and assessed its effects on PWB in a domain-general (Study 3, U.S. sample) and domain-specific (Study 4, U.K. sample) fashion. All studies were approved by the Institutional Review Board of [MASKED] University. We report all manipulations, measures, and data exclusions. We pre-registered the hypotheses, analyses, and exclusion criteria<sup>1</sup> on the Open Science Framework for Study 1 and Study 2.

## 5. Study 1

As an initial test of our hypothesis that authenticity is a mechanism linking nostalgia to greater PWB, we asked participants in Study 1 to complete trait measures of nostalgia, authenticity, and PWB. We began with a broad assessment of nostalgia. First, we used the Southampton Nostalgia Scale (SNS; Sedikides et al., 2015). Although its construct validity has been supported in past research (for a review, see Wildschut & Sedikides, 2022a), some authors have expressed concerns about this measure (Newman et al., 2020). To address this issue, we used three additional nostalgia measures: (1) the Nostalgia Inventory (NI; Batcho, 1995), (2) the Nostalgia Prototype Scale (NPS; Cheung et al., 2020), and (3) the Personal Inventory of Nostalgic Experiences (PINE; Newman et al., 2020). We assessed authenticity with the Southampton Authenticity Scale (SAS), developed for this research, and the Authentic Living subscale of Wood et al.'s (2008) Authenticity Scale. We assessed PWB with the Comprehensive Inventory of Thriving (CIT; Su et al., 2014). Finally, we recruited participants from the U.S. and China to test the cross-cultural generalizability of the findings.

### 5.1. Method

#### 5.1.1. Participants

We implemented the MedPower app (Kenny, 2017) to estimate the sample size required to observe an indirect effect of nostalgia on PWB via authenticity. We specified small-to-medium relations ( $r_s = 0.20$ ) between nostalgia and authenticity (path *a*) and between authenticity and PWB (path *b*), as well as a small direct association ( $r = 0.10$ ) of nostalgia with PWB (path *c'*). We based the effect size estimates for nostalgia on authenticity (path *a*) and authenticity on PWB (path *b*) on meta-analytic research reporting small-to-medium effects ( $r = 0.21$ ) in personality and social psychological research (Richard et al., 2003). Relying on these parameters, we were able to detect an indirect effect with 255 participants at 80% power. To explore the possibility of cultural moderation, we doubled this target sample size and aimed to recruit approximately 300 U.S. and 300 Chinese participants. This sample gives Study 1 sufficient power to detect complete attenuation of the indirect effect (Aberson et al., 2020).

**U.S. Participants.** We recruited 311 U.S. participants online via Prolific Academic. They ranged in age from 18 to 72 years ( $M = 34.77$ ,  $SD = 11.27$ ). Also, they were mostly female ( $n = 164$ , 52.73%) and educated beyond high school ( $n = 280$ , 90.03%). We remunerated them with \$1.00.

**Chinese Participants.** We recruited 300 Chinese participants online via Credamo. They ranged in age from 19 to 59 years ( $M = 29.17$ ,  $SD = 6.31$ ). They were also predominantly female ( $n = 167$ , 55.67%) and educated beyond high school ( $n = 291$ , 97.00%). We remunerated them with 7 Yuan (~ \$1.00).

<sup>1</sup> For Study 2, we preregistered the exclusion of participants who scored  $\pm 3$  standard deviations from the mean for measures of our mediator and dependent variable. Due to concerns about this technique (Leys et al., 2013) and the existence of more appropriate techniques for multivariate data (Leys et al., 2018), we elected not to implement this exclusion (not only in Study 2, but also in subsequent studies) in the manuscript. Nevertheless, results were similar regardless of whether we included or excluded outliers.

5.1.2. Procedure

Nostalgia. We assessed trait nostalgia with four scales presented in a separate random order for each participant.

**Southampton Nostalgia Scale.** The SNS (Sedikides et al., 2015) first presents participants with a definition of nostalgia (“a sentimental longing for the past”). Next, they respond to seven questions referring to the personal importance (e.g., “How important is nostalgia for you?”; 1 = *not at all*, 7 = *very much*) and frequency (e.g., “How often do you experience nostalgia?”; 1 = *very rarely*, 7 = *very frequently*) of nostalgic engagement ( $M = 4.88, SD = 1.18, \alpha = 0.91$ ).

**Nostalgia Inventory.** The NI (Batcho, 1995)<sup>2</sup> asks participants to rate how nostalgic they feel about 18 objects, such as persons (e.g., family, friends), situations (e.g., the way society was), or events (e.g., vacations), from their past (1 = *not at all nostalgic*, 7 = *very nostalgic*;  $M = 4.79, SD = 1.01, \alpha = 0.90$ ).

**Nostalgia Prototype Scale.** The NPS (Cheung et al., 2020) asks participants to indicate how frequently they experience (1 = *I do this very rarely*, 7 = *I do this very often*), and the importance they place upon (1 = *This is not important for me*, 6 = *This is very important for me*), five prototypical aspects of nostalgia (e.g., “I bring to mind rose-tinted memories,” “I reflect on keepsakes”). Unlike other measures, the NPS does not use the word ‘nostalgia.’ Following Cheung et al. (2020), we aggregated the 10 responses (5 behaviors × 2 ratings;  $M = 4.85, SD = 1.19, \alpha = 0.92$ ).

**Personal Inventory of Nostalgic Experiences.** The 4-item PINE (Newman et al., 2020) asks participants how nostalgic they feel in general (e.g., “How nostalgic do you feel?” “To what extent do you feel sentimental for the past?”; 1 = *not at all*, 7 = *very much*;  $M = 4.90, SD = 1.28, \alpha = 0.86$ ).

**Authenticity.** Following the nostalgia measures, we assessed authenticity with the SAS and Wood et al.’s (2008) Authentic Living subscale. We administered the measures in a random order for each participant. The SAS consisted of four items that closely resembled those used by Flesson and Wilt (2010): “In general, I feel authentic,” “In general, I feel true to myself,” “In general, I feel like the real me,” “In general, I feel genuine” (1 = *strongly disagree*, 7 = *strongly agree*;  $M = 5.81, SD = 0.95, \alpha = 0.91$ ). The Authentic Living subscale ( $M = 5.89, SD = 0.80, \alpha = 0.82$ ) contains items pertaining to the expression of the true self (e.g., “I live in accordance with my values and beliefs”), which is regarded as a component of felt authenticity (Sheldon et al., 1997; Turner & Billings, 1991).

**Psychological Wellbeing.** We assessed PWB with the Brief Inventory of Thriving (BIT; Su et al., 2014), a 10-item version of the Comprehensive Inventory of Thriving (CIT; Su et al., 2014). The CIT and BIT were developed with a holistic view of positive functioning and thus measure a broad range of PWB constructs (e.g., meaning, belonging, optimism). Given that the CIT and BIT have comparable psychometric properties (e.g., test-retest reliability, internal consistency), and our hypotheses were not specific to a particular domain of PWB, we elected to use the BIT (1 = *strongly disagree*, 5 = *strongly agree*;  $M = 3.76, SD = 0.70, \alpha = 0.92$ ).

5.2. Results

5.2.1. Bivariate correlations

As shown in Table 1, we observed high correlations among our nostalgia measures,  $r_s(609) > 0.77, p_s < 0.001$ , and between our

<sup>2</sup> The initial version of the Nostalgia Inventory (Batcho, 1995) included two additional objects: heroes/heroines and church/religion. We deleted them, as we questioned their applicability to the Chinese (Studies 1–2) cultural context. Also, the initial version of the Nostalgia Inventory included for each item the labels “not at all” and “very much” in response to the stem: “what you miss about when you were younger and how much you miss it.” We replaced those two labels with “not at all nostalgic” and “very nostalgic”, correspondingly, because “miss” is only a small part (i.e., a feature) of the prototypical nostalgia construct (Hepper et al., 2012, 2014).

Table 1

Bivariate correlations (Study 1).

	SNS	NPS	NI	PINE	SAS	AL
SNS	–					
NPS	0.81***	–				
NI	0.77***	0.81***	–			
PINE	0.81***	0.81***	0.74***	–		
SAS	0.22**	0.32**	0.28**	0.24**	–	
AL	0.12**	0.18**	0.23**	0.13**	0.62***	–
BIT	0.27**	0.42**	0.35**	0.23**	0.59***	0.40***

Note. SNS = Southampton Nostalgia Scale; NPS = Nostalgia Prototype Scale; NI = Nostalgia Inventory; PINE = Personal Inventory of Nostalgic Experiences; SAS = Southampton Authenticity Scale; AL = Authentic Living; BIT = Brief Inventory of Thriving. The degrees of freedom for all correlations were 609. \*\* $p < .01$ , \*\*\* $p < .001$ .

authenticity measures  $r(609) = 0.62, p < .001$ . Given the convergent validity of both the nostalgia and authenticity measures, we computed composite indices of nostalgia and authenticity for the mediational analyses reported below. As our preregistration did not specify whether we would collapse across measures of the same construct, we report analyses of each measure individually in Supplemental Materials.

5.2.2. Cultural differences

As shown in Table 2, Chinese participants scored higher than U.S. participants on all four nostalgia measures, the SAS (but not Authentic Living subscale), and the BIT,  $F_s(1, 609) > 17, p_s < 0.001, d_s > 0.34$ .

5.2.3. Mediation

Next, we conducted a mediation analysis using Model 4 of the Process Macro (Hayes, 2017) to test our hypothesis that authenticity mediates the link between nostalgia and PWB (Fig. 1). First, nostalgia was associated with increased PWB (i.e., the total effect or  $c$  path),  $b = 0.23, SE = 0.03, t(609) = 9.00, p < .001, 95\% CI [0.18, 0.27]$ . Also, nostalgia was associated with higher authenticity (i.e., the  $a$  path),  $b = 0.19, SE = 0.03, t(609) = 6.71, p < .001, 95\% CI [0.14, 0.25]$ . Moreover, authenticity predicted increased PWB when controlling for nostalgia (i.e., the  $b$  path),  $b = 0.45, SE = 0.03, t(609) = 15.03, p < .001, 95\% CI [0.39, 0.51]$ . The indirect effect of nostalgia on PWB through authenticity ( $ab$ ) was significant,  $ab = 0.09, SE = 0.02, 95\% CI [0.06, 0.12]$ . Finally, the completely standardized indirect effect (Preacher & Kelley, 2011) was moderately sized,  $ab_{cs} = 0.13, SE = 0.02, 95\% CI = [0.09, 0.18]$ . Sensitivity analysis in G\*Power 3.1 (Faul et al., 2007) suggests that the minimum effect size we are able to detect with 611 participants, 80% power, and  $\alpha = 0.05$  is  $r = 0.113$ . Given that the indirect effect is a product of the  $a$  path and the  $b$  path ( $ab$ ), 611 participants, 80% power, and  $\alpha = 0.05$  allow us to detect indirect effects as low as  $ab = 0.01$ .

We conducted eight ancillary mediation analyses using individual nostalgia and authenticity measures (4 nostalgia measures × 2

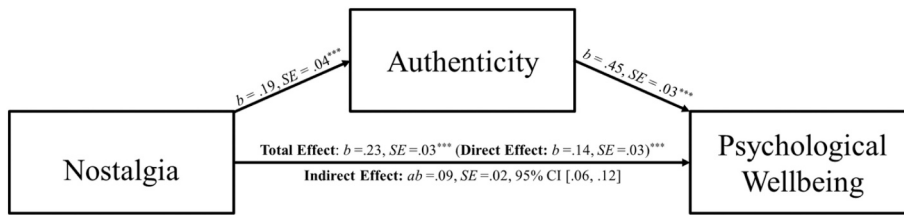
Table 2

Means, standard deviations, and effect sizes (Study 1).

Measure	US	China	$F(1, 609)$	$d$
	$M(SD)$	$M(SD)$		
SNS	4.53 (1.34)	5.24 (0.86)	59.41***	0.63
NI	4.42 (1.09)	5.17 (0.74)	97.48***	0.80
NPS	4.35 (1.27)	5.36 (0.85)	130.06***	0.93
PINE	4.48 (1.44)	5.33 (0.91)	76.67***	0.70
SAS	5.65 (1.14)	5.97 (0.67)	17.12***	0.34
AL	5.88 (0.94)	5.91 (0.61)	0.29	0.04
BIT	3.58 (0.80)	4.17 (0.41)	132.48***	0.88

Note. SNS = Southampton Nostalgia Scale; NI = Nostalgia Inventory; NPS = Nostalgia Prototype Scale; PINE = Personal Inventory of Nostalgic Experiences; SAS = Southampton Authenticity Scale; AL = Authentic Living; BIT = Brief Inventory of Thriving. \*\*\* $p < .001$ .





**Fig. 1.** The association of trait nostalgia with psychological wellbeing via authenticity (Study 1). Note. Parameter estimates are unstandardized. We calculated standard errors and 95% confidence intervals for the indirect effect with the percentile bootstrap approach based on 10,000 bootstrap samples (Hayes, 2017). We note in parenthesis the association of nostalgia with PWB controlling for authenticity (c'). \*\*\* $p < .001$ .

authenticity measures) and obtained comparable results (Supplemental Material, Table 1S).

#### 5.2.4. Moderated mediation

Next, we carried out moderated mediation analyses using Model 59 of the Process Macro (Hayes, 2017). This approach allows us to examine whether culture (U.S. vs. China) impacts any of the paths in the mediational model. We did not preregister this analysis. First, culture moderated the association between nostalgia and authenticity,  $b = 0.20$ ,  $SE = 0.07$ ,  $t = 2.81$ ,  $p = .005$ , 95% CI [0.06, 0.33]. In both cultures, nostalgia was associated with increased authenticity, but the effect was stronger in Chinese ( $b = 0.33$ ,  $SE = 0.06$ ,  $t = 5.59$ ,  $p < .001$ , 95% CI [0.22, 0.45]) compared to U.S. ( $b = 0.14$ ,  $SE = 0.04$ ,  $t = 3.75$ ,  $p = .002$ , 95% CI [0.06, 0.21]) participants. Culture did not moderate the nostalgia-PWB link ( $b = 0.02$ ,  $SE = 0.05$ ,  $t = 0.41$ ,  $p = .683$ , 95% CI [-0.08, 0.12]) or the authenticity-PWB link ( $b = -0.09$ ,  $SE = 0.07$ ,  $t = -1.42$ ,  $p = .158$ , 95% CI [-0.22, 0.04]). The indirect effect of nostalgia on PWB through authenticity ( $ab$ ) was significant for both Chinese ( $b = 0.13$ ,  $SE = 0.03$ , 95% CI [0.08, 0.19]) and U.S. ( $b = 0.06$ ,  $SE = 0.02$ , 95% CI [0.02, 0.11]) participants. These indirect effects did not differ significantly as function of culture, as the index of moderated mediation (i.e., the difference between conditional indirect effects; Hayes, 2015) was not significant,  $Index = 0.06$ ,  $SE = 0.04$ , 95% CI [-0.01, 0.13]. Analyses using individual nostalgia and authenticity measures produced comparable results (Supplemental Material, Table 2S).

#### 5.3. Discussion

The results were consistent with our hypothesis: Authenticity mediated the association between nostalgia and PWB. The findings generalized across measures and cultures. However, Study 1 was correlational and thus did not permit us to make causal statements. To address this limitation, we adopted an experimental causal chain approach (Spencer et al., 2005). In separate experiments, we manipulated nostalgia (measuring authenticity and PWB; Study 2) and authenticity (measuring PWB; Studies 3–4).

## 6. Study 2

In Study 2, we initiated the experimental causal chain approach by manipulating nostalgia, and then measuring authenticity and PWB. As in Study 1, we recruited participants from both the U.S. and China, to examine the cross-cultural generalizability of our findings. Two prior experiments have tested the first link in the postulated causal chain (nostalgia  $\rightarrow$  authenticity). First, Baldwin et al. (2015) found that nostalgia strengthened the accessibility of the intrinsic self-concept—who people think they truly are. Second, Stephan et al. (2012) found that induced nostalgia augmented authenticity. These authors, however, assessed authenticity with a single item. Single-item measures of psychological constructs are often less reliable and valid than multi-item ones (Cronbach & Meehl, 1955; Diamantopoulos et al., 2012). Consequently, in Study 2, we assessed authenticity with the state version of the SAS. For validation purposes, we also administered the Authentic Living subscale of Wood et al.'s (2008) Authenticity Scale.

## 6.1. Method

### 6.1.1. Participants

To determine the sample size for our primary outcomes (the effect of induced nostalgia on authenticity and PWB) we conducted an a priori power analysis in G\*Power 3.1 (Faul et al., 2007). We aimed for 80% power, assuming a two-sided test and an alpha level of 0.05. For our effect size estimate, we used Frankenbach et al.'s (2021) meta-analytic estimate of the overall effect of induced nostalgia across various outcomes (i.e., self-oriented, existential, and social functions; Cohen's  $d = 0.28$  or  $f = 0.14$ ). Based on these parameters, 392 participants were required. To explore the possibility of cultural moderation, we sought to recruit a sample of this size in both the U.S. and China.

**U.S. Participants.** We slightly oversampled, in anticipation of attrition, recruiting 406 U.S. participants online via Prolific Academic. They ranged in age from 18 to 72 years ( $M = 34.77$ ,  $SD = 11.27$ ), were predominantly female ( $n = 235$ , 57.88%), and most were educated beyond high school ( $n = 280$ , 90.03%). We paid them \$1.50. Twenty-one participants did not follow instructions on the Event Reflection Task (e.g., writing about a nostalgic or momentous event when instructed to write about an ordinary event), leaving 385 participants for the analyses reported below.

**Chinese Participants.** We slightly oversampled, recruiting 400 Chinese participants online via the crowdsourcing platform Credamo. They ranged in age from 19 to 59 years ( $M = 29.17$ ,  $SD = 6.31$ ), were predominantly female ( $n = 219$ , 54.75%), and most were educated beyond high school ( $n = 391$ , 97.00%). We reimbursed them with 10 Yuan (~\$1.50). Eight participants did not follow instructions on the Event Reflection Task (as above), leaving 392 participants for the analyses reported below.

### 6.1.2. Procedure

**Manipulation.** We manipulated nostalgia with the Event Reflection Task (Sedikides et al., 2015; Wildschut et al., 2006). In the *nostalgia condition*, participants read: "Please bring to mind a nostalgic event in your life. Specifically, try to think of a past event that makes you feel nostalgic. Take a few moments to think about the event and how it made you feel." In the *control condition*, they read: "Please bring to mind an ordinary event in your life. Specifically, try to think of a past event that is ordinary." In both conditions, participants summarized the event with four keywords and wrote about it for up to five minutes.

**Manipulation Check.** Immediately following the manipulation, participants responded to a 3-item manipulation check (Hepper et al., 2012; Wildschut et al., 2006): "Thinking about this event leaves me feeling nostalgic," "I feel nostalgic when I think about this event," "This is a nostalgic event for me" ( $M = 5.08$ ,  $SD = 1.78$ ,  $\alpha = 0.97$ ).

**Authenticity.** We assessed authenticity in two ways, as in Study 1. First, participants completed a state version of the SAS. The items were preceded by the stem "Right now" (instead of "In general"); 1 = *strongly disagree*, 7 = *strongly agree*;  $M = 6.02$ ,  $SD = 0.89$ ,  $\alpha = 0.90$ ). Second, participants completed the state version of the 4-item Authentic Living subscale ( $M = 5.93$ ,  $SD = 0.77$ ,  $\alpha = 0.79$ ).

**Psychological Wellbeing.** We assessed PWB with the BIT, as in Study 1. Participants rated items on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*;  $M = 5.38$ ,  $SD = 1.11$ ,  $\alpha = 0.94$ ).

**Table 3**  
Means and standard deviations as a function of culture and condition (Study 2).

Measure	US		China	
	<i>M (SD)</i>		<i>M (SD)</i>	
	Nostalgia	Control	Nostalgia	Control
SAS	6.12 (0.96)	5.83 (1.12)	6.17 (0.68)	5.95 (0.68)
AL	6.07 (0.79)	5.92 (0.91)	5.92 (0.59)	5.81 (0.76)
AI	6.10 (0.78)	5.88 (0.88)	6.04 (0.54)	5.88 (0.66)
BIT	5.21 (1.26)	4.95 (1.36)	5.71 (0.72)	5.62 (0.79)

Note. SAS = Southampton Authenticity Scale; AL = Authentic Living; AI = Authenticity Index; BIT = Brief Inventory of Thriving.

## 6.2. Results

### 6.2.1. Manipulation check

We analyzed responses to the nostalgia manipulation check in a 2 (culture: U.S. vs. China)  $\times$  2 (condition: nostalgia vs. control) Analysis of Variance (ANOVA). We report means and standard deviations in Table 3. As intended, participants in the nostalgia condition ( $M = 6.16$ ,  $SD = 0.78$ ) reported feeling more nostalgic than those in the control condition ( $M = 3.94$ ,  $SD = 1.83$ ),  $F(1, 774) = 494.54$ ,  $p < .001$ , partial  $\eta^2 = 0.390$ . There was no main effect of culture,  $F(1, 774) = 0.71$ ,  $p = .399$ , partial  $\eta^2 = 0.001$ , nor a Culture  $\times$  Condition interaction,  $F(1, 774) = 2.56$ ,  $p = .110$ , partial  $\eta^2 = 0.003$ . Thus, the manipulation was effective, and equivalently so, across cultures.

### 6.2.2. Authenticity

The two authenticity measures were highly correlated,  $r = 0.54$ ,  $p < .001$ , supporting the construct validity of both scales (Campbell & Fiske, 1959). As in Study 1, we averaged the two measures to create an authenticity index for the mediational analyses reported below. As in Study 1, because our preregistration did not specify whether we would collapse across measures of the same construct, we report analyses of each measure separately in Supplemental Materials. We report means and standard deviations in Table 3.

### 6.2.3. Mediation

Next, we conducted a mediation analysis using Model 4 of the Process Macro (Hayes, 2017) to test our hypothesis that authenticity mediates nostalgia's effect on PWB (Fig. 2). Induced nostalgia (coded 0 = control, 1 = nostalgia) increased PWB (i.e., the total effect or  $c$  path),  $b = 0.16$ ,  $SE = 0.08$ ,  $t(776) = 2.03$ ,  $p = .042$ , 95% CI [0.01, 0.32]. Also, induced nostalgia increased authenticity (i.e., the  $a$  path),  $b = 0.19$ ,  $SE = 0.05$ ,  $t(776) = 3.67$ ,  $p < .001$ , 95% CI [0.09, 0.29]. Moreover, authenticity predicted increased PWB (i.e., the  $b$  path),  $b = 0.84$ ,  $SE = 0.05$ ,  $t(776) = 18.31$ ,  $p < .001$ , 95% CI [0.75, 0.93]. Furthermore, the indirect effect of nostalgia on PWB through authenticity ( $ab$ ) was significant,  $ab = 0.16$ ,  $SE = 0.04$ , 95% CI [0.07, 0.25]. Finally, the partially standardized indirect effect was moderately sized,  $ab_{ps} = 0.14$ ,  $SE = 0.04$ , 95% CI [0.07, 0.22]. Separate analyses for each authenticity measure produced comparable results (Supplemental Material). Sensitivity analysis in G\*Power 3.1 (Faul et al., 2007) suggests that the minimum effect size we are able to detect with 777 participants, 80% power, and  $\alpha = 0.05$  is  $r = 0.100$ . Given that the indirect effect is a product of the  $a$  path and the  $b$  path ( $ab$ ), 777 participants, 80% power, and  $\alpha = 0.05$  allow us to detect indirect effects as low as  $ab = 0.01$ .

### 6.2.4. Moderated mediation

We followed up on the analysis above by conducting a moderated mediation analysis using Model 59 of the Process Macro (Hayes, 2017). This approach allows us to examine whether culture (U.S. vs. China) impacts any of the paths in the mediational model. First, the effect of induced nostalgia on authenticity was unmoderated by culture,

$b = -0.06$ ,  $SE = 0.10$ ,  $t(776) = -0.57$ ,  $p = .566$ , 95% CI [-0.26, 0.14].<sup>3</sup> Second, the effect of induced nostalgia on PWB was unmoderated by culture,  $b = -0.12$ ,  $SE = 0.13$ ,  $t(776) = -0.98$ ,  $p = .328$ , 95% CI [-0.37, 0.12].<sup>4</sup> Third, the relationship between authenticity and PWB was unmoderated by culture,  $b = 0.01$ ,  $SE = 0.09$ ,  $t(776) = 0.14$ ,  $p = .887$ , 95% CI [-0.17, 0.19]. Furthermore, the indirect effect of nostalgia on PWB through authenticity ( $ab$ ) was significant among U.S. ( $ab = 0.19$ ,  $SE = 0.07$ , 95% CI [0.04, 0.34]) and Chinese ( $ab = 0.14$ ,  $SE = 0.05$ , 95% CI [0.04, 0.24]) participants. Finally, the index of moderation mediation (i.e., test of the difference between conditional indirect effects; Hayes, 2015) was not significant,  $Index = -0.04$ ,  $SE = 0.09$ , 95% CI [-0.23, 0.12].

### 6.2.5. Positive affect in narratives

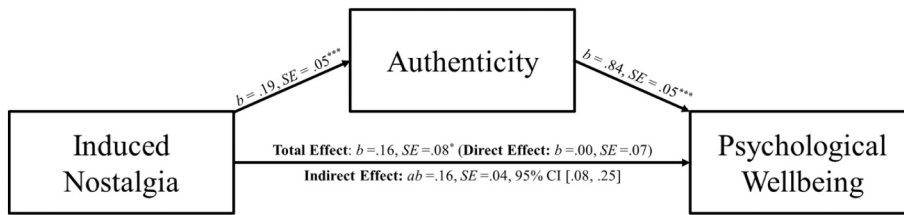
We did not measure positive affect, because the effects of nostalgia (at the trait or state level) are independent of it (Sedikides et al., 2015; Sedikides & Wildschut, 2018, 2019; Wildschut & Sedikides, 2022b). Still, we proceeded to assess its role by testing whether positive affect content explained the effects of induced nostalgia on authenticity. In particular, we content analyzed the nostalgic and control narratives for positive affect content using Linguistic Inquiry and Word Count (LIWC-22; Boyd et al., 2022). LIWC is a validated method for assessing verbal expression of emotion (Kahn et al., 2007). Based on an internal dictionary, LIWC allocates each word and word combination to one or more linguistics categories. The number of words in each category is reported as a percentage to account for participant differences in text length. We derived the percentage of words falling into the positive affect (POSEMO; e.g., "happy," "joy," "love") category. For Chinese participants we first used a Chinese lexical analyser NLP-ICTCLAS (Zhang, Miao, Liu, Wesson, & Shang, 2020) to segment the narratives into words, because Chinese, unlike English, does not contain word delimiters (e.g., white-spaces). Next, we implemented the Simplified Chinese version of LIWC (Huang et al., 2012) to analyze nostalgic and control narratives for positive affect content. This text processing procedure has been used in past research (Qiu et al., 2017; Qiu, Chen, Ramsay, & Lu, 2019).

First, we examined positive affect content in a 2 (culture: U.S. vs. China)  $\times$  2 (condition: nostalgia vs. control) ANOVA. Positive affect content was higher in the nostalgia condition ( $M = 2.39\%$ ,  $SD = 1.75\%$ ) compared the control condition ( $M = 1.83\%$ ,  $SD = 2.09\%$ ),  $F(1, 774) = 16.50$ ,  $p < .001$ , partial  $\eta^2 = 0.021$ . There was no main effect of culture,  $F(1, 774) = 0.78$ ,  $p = .379$ , partial  $\eta^2 = 0.001$ . There was a Culture  $\times$  Condition interaction,  $F(1, 774) = 5.49$ ,  $p = .019$ , partial  $\eta^2 = 0.007$ . Simple main effects revealed that among U.S. participants there was no difference in positive affect content between the nostalgia condition ( $M = 2.29\%$ ,  $SD = 1.86\%$ ) and control condition ( $M = 2.06\%$ ,  $SD = 2.48\%$ ),  $F(1, 774) = 1.47$ ,  $p = .227$ , partial  $\eta^2 = 0.002$ . Among Chinese participants, there was more positive affect content in the nostalgia condition ( $M = 2.49\%$ ,  $SD = 1.63\%$ ) compared to the control condition ( $M = 1.61\%$ ,  $SD = 1.59\%$ ),  $F(1, 774) = 20.69$ ,  $p < .001$ , partial  $\eta^2 = 0.026$ .

Next, we statistically controlled for the role of positive affect content in a 2 (culture: U.S. vs. China)  $\times$  2 (condition: nostalgia vs. control) Analysis of Covariance. Positive affect content was associated with increased authenticity,  $F(1, 773) = 14.07$ ,  $p < .001$ , partial  $\eta^2 = 0.018$ . When controlling for positive affect content, participants in the nostalgia condition reported feeling more authentic than those in the control condition,  $F(1, 773) = 9.67$ ,  $p = .002$ , partial  $\eta^2 = 0.012$ . There was no main effect of culture,  $F(1, 773) = 0.16$ ,  $p = .690$ , partial  $\eta^2 < 0.001$ , nor

<sup>3</sup> We preregistered a Culture  $\times$  Nostalgia ANOVA to examine the moderating role of culture on authenticity. We did not include those analyses, because they are redundant with the moderated mediation analyses.

<sup>4</sup> We preregistered a Culture  $\times$  Nostalgia ANOVA to examine the moderating role of culture on PWB. We do not include those analyses, as they are redundant with the moderated mediation analyses.



**Fig. 2.** The effect of induced nostalgia on psychological wellbeing via authenticity (Study 2). *Note.* Parameter estimates are unstandardized. We calculated standard errors and 95% confidence intervals for the indirect effect with the percentile bootstrap approach based on 10,000 bootstrap samples (Hayes, 2017). We note parenthetically the effect of nostalgia on PWB controlling for authenticity (*c'*). \* $p < .05$ , \*\*\* $p < .001$ .

a Culture  $\times$  Condition interaction,  $F(1, 773) = 0.80$ ,  $p = .373$ , partial  $\eta^2 = 0.001$ . Next, we conducted a moderated mediation analysis using Model 59 of the Process Macro (Hayes, 2017) to examine whether positive affect content mediated the effect of induced nostalgia on authenticity in either culture. The indirect effect of nostalgia on authenticity through positive affect content (*ab*) was not significant for Chinese ( $b = 0.02$ ,  $SE = 0.02$ , 95% CI  $[-0.02, 0.05]$ ) or American ( $b = 0.02$ ,  $SE = 0.02$ , 95% CI  $[-0.01, 0.05]$ ) participants. These indirect effects did not differ significantly from one another, as the index of moderated mediation (i.e., the difference between conditional indirect effects; Hayes, 2015) was not significant,  $Index = 0.0001$ ,  $SE = 0.02$ , 95% CI  $[-0.05, 0.05]$ .

### 6.3. Discussion

Experimentally induced nostalgia increased authenticity. Further, induced nostalgia increased PWB, and this effect was mediated by authenticity. These findings were largely invariant across cultures. Moreover, ancillary analyses revealed that positive affect content in narratives did not explain the effect of nostalgia on authenticity: The effect of induced nostalgia on authenticity held above and beyond positive affect content, and positive affect content did not mediate the link between induced nostalgia and authenticity in either Chinese or U.S. or culture.

Given evidence for the causal role of nostalgia in fostering authenticity, we next turned to the second link in the postulated causal chain by testing the causal role of authenticity in fostering PWB. As culture did not moderate the association between authenticity and PWB in Studies 1–2, we did not consider it further. Instead, we tested Western samples (Study 3: U.S. sample; Study 4: U.K. sample).

## 7. Study 3

In Study 3, we tested whether authenticity impacts causally on PWB. Although previous research has examined the link between authenticity and PWB, this research has been largely correlational (Thomaes et al., 2017). Schlegel et al. (2013, Study 5) implemented an experimental manipulation that could be considered an authenticity induction. They varied true self-knowledge, a conscious awareness of characteristics that describe one's true self. It is not clear, however, how true self-knowledge maps onto our conceptualization of authenticity in terms of sense of true self. Put otherwise, true self-knowledge is not necessary for the production of felt authenticity, given that the latter can result from positive mood (Lenton, et al., 2013b), engaging in familiar activities (Lenton, Bruder, et al., 2013), or hanging out (Lenton, Bruder, et al., 2013). The same work (Schlegel et al., 2013, Studies 1–5) focused on a narrow aspect of PWB (i.e., decision satisfaction), leaving unanswered questions of generalizability to other PWB indicators.

In Study 3, we experimentally manipulated authenticity and examined its consequences on a general measure of PWB. Consistent with prior theory and correlational research, we conceptualized authenticity as varying along a continuum ranging from inauthenticity to authenticity (Thomaes et al., 2017; Wood et al., 2008). To operationalize this continuum in Study 3, we included an *inauthenticity condition* and an *authenticity condition*. In addition to these two polar opposites, we

included an intermediate *control condition*. The reason for adding this neutral control condition was to divide the authenticity continuum into a lower (inauthenticity to control) and an upper (control to authenticity) region, and test whether variation in one region more strongly affects PWB than does variation in the other region (Lonati et al., 2018).

### 7.1. Method

#### 7.1.1. Participants

To determine the sample size for our primary outcome (the effect of induced authenticity on PWB) we conducted a priori power analysis in G\*Power 3.1 (Faul et al., 2007). We aimed for 80% power, assuming a two-sided test, and an alpha level of 0.05. A recent meta-analytic estimate suggested that the association between authenticity and PWB is moderate-to-large (Sutton, 2020). However, given our aim to identify a causal effect and our novel experimental manipulation of authenticity, we elected to adopt a more conservative effect size estimate and so determined the sample size required to detect small-to-medium effects ( $f = 0.13$ ). This analysis indicated that 576 participants were needed to achieve 80% power to detect small-to-medium effects ( $f = 0.13$ ) in a one-way ANOVA with three conditions. We recruited 596 U.S. residents via MTurk, ranging in age from 19 to 74 years ( $M = 36.22$ ,  $SD = 10.49$ ). They were predominantly male ( $n = 306$ , 51.34%), White ( $n = 419$ , 70.30%), and educated beyond high school ( $n = 555$ , 93.12%).

#### 7.1.2. Procedure

We randomly assigned participants to one of three conditions (Lenton, Bruder, et al., 2013). In the *authenticity condition* ( $n = 212$ ), participants read: "According to psychologists, the sense of authenticity is defined as 'the sense or feeling that you are in alignment with your true, genuine self.' In other words, the sense of authenticity is the feeling that you are being your real self. Please think of an event in your life when you behaved authentically." In the *inauthenticity condition* ( $n = 195$ ), participants read: "According to psychologists, the sense of inauthenticity is defined as 'the sense or feeling that you are not in alignment with your true, genuine self.' In other words, the sense of inauthenticity is the feeling that you are not being your real self. Please think of an event in your life when you behaved inauthentically." In the *control condition* ( $n = 189$ ), participants recalled an ordinary event. In each condition, participants then brought the event to mind, listed four relevant keywords, and wrote about it for up to five minutes. Next, they completed the state version of the SAS used in Study 2. In Study 3, it served as manipulation check ( $M = 5.63$ ,  $SD = 1.40$ ,  $\alpha = 0.96$ ). Finally, we assessed PWB with the BIT, as in Studies 1–2 ( $M = 3.85$ ,  $SD = 0.78$ ,  $\alpha = 0.93$ ).

#### 7.1.3. Analytic strategy

We used one-way ANOVA to test the influence of our three-level independent variable on the manipulation check and PWB. We first tested the omnibus effect. If statistically significant, we partitioned it with two planned orthogonal contrasts. The first (linear) contrast assessed whether felt authenticity and PWB were lowest in the inauthenticity condition ( $= -1$ ), intermediate in the control condition ( $= 0$ ), and highest in the authenticity condition ( $= 1$ ). The second (quadratic) contrast assessed whether the magnitude of the difference between the



inauthenticity (= 1) and control (= -2) conditions differed significantly from the magnitude of the difference between the control and authenticity (= 1) conditions.<sup>5</sup>

## 7.2. Results

**Manipulation Check.** The omnibus condition effect on felt authenticity was significant,  $F(2, 593) = 46.50, p < .001, \eta^2 = 0.136$ . We followed up with our two planned contrasts. The first contrast was significant,  $F(1, 593) = 88.00, p < .001, \eta^2 = 0.130$ . Felt authenticity was lowest in the inauthenticity condition ( $M = 4.92, SD = 1.80$ ), intermediate in the control condition ( $M = 5.81, SD = 1.06$ ), and highest in the authenticity condition ( $M = 6.13, SD = 0.88$ ). The second contrast was also significant,  $F(1, 593) = 6.03, p = .014, \eta^2 = 0.010$ , indicating that the difference between the inauthenticity and control conditions was larger than the difference between the control and authenticity conditions. The latter result raises the question whether a simple comparison between the control and authenticity conditions itself was significant. A relevant analysis revealed that it was,  $F(1, 593) = 6.20, p = .013, \eta^2 = 0.010$ .

**Psychological Wellbeing.** The omnibus condition effect was significant,  $F(2, 593) = 4.94, p = .007, \eta^2 = 0.016$ . Sensitivity analysis in G\*Power 3.1 (Faul et al., 2007) suggests that the minimum effect size we are able to detect with 596 participants, 80% power, and  $\alpha = 0.05$  is  $f = 0.127$ . The obtained effect size  $\eta^2 = 0.016$  translates to  $f = 0.129$ . Thus, our main analysis is adequately powered. We partitioned the omnibus effect with our two planned contrasts. The first contrast was significant,  $F(1, 593) = 9.78, p = .002, \eta^2 = 0.016$ . PWB was lowest in the inauthenticity condition ( $M = 3.72, SD = 0.77$ ), intermediate in the control condition ( $M = 3.84, SD = 0.81$ ), and highest in the authenticity condition ( $M = 3.97, SD = 0.74$ ). The second contrast was not significant,  $F(1, 593) = 0.06, p = .807, \eta^2 < 0.001$ , indicating that PWB in the control condition was approximately equidistant between PWB in the inauthenticity and authenticity conditions.

**Ancillary Analyses.** We can use felt authenticity ratings (i.e., the manipulation check) to define the numerical intervals between conditions along the inauthenticity—authenticity dimension. The interval between the inauthenticity and control conditions ( $M_{\text{control}} - M_{\text{inauthenticity}} = 0.89$ ) is approximately three times larger than the interval between the control and authenticity conditions ( $M_{\text{authenticity}} - M_{\text{control}} = 0.32$ ). Cohen and Cohen (1983) describe how this issue of unequal intervals can be easily remedied by conceiving of a scale with unequal intervals “as one with equal intervals some of whose scale points have no data” (p. 249) and recoding the contrasts accordingly (Supplemental Materials). After recoding the contrasts in this manner, analysis of felt authenticity revealed, as intended, that the first (linear) contrast was significant,  $F(1, 593) = 88.00, p < .001, \eta^2 = 0.130$ , whereas the second (quadratic) contrast was not,  $F(1, 593) = 0.03, p = .856, \eta^2 < 0.001$ . Importantly, results for PWB were essentially unchanged; the first contrast was significant,  $F(1, 593) = 9.78, p = .002, \eta^2 = 0.160$ , but the second contrast was not,  $F(1, 593) = 1.19, p = .276, \eta^2 = 0.002$ .

## 7.3. Discussion

By providing experimental evidence that authenticity (vs. inauthenticity) increases PWB, our results support a causal model whereby

<sup>5</sup> We used planned orthogonal contrasts rather than pairwise post-hoc comparisons among the three conditions for two reasons. First, pairwise comparisons could not answer the question whether the difference between inauthenticity and control differs significantly from the difference between control and authenticity; that is, whether variation in one region of the inauthenticity—authenticity continuum more strongly affects PWB than does variation in the other region. Second, controlling Type 1 error rate for all pairwise comparisons is costly in terms of statistical power.

authenticity mediates the link between nostalgia and PWB. However, Study 3 used a general measure of PWB. Next, we examined the effect of authenticity across a range of PWB domains.

## 8. Study 4

In Study 4, we aimed to replicate and extend Study 3 findings by offering a more precise characterization of authenticity’s effects on PWB. We used the CIT (Su et al., 2014), which assesses a broad range of PWB domains. We omitted the neutral control condition, as we found no evidence in Study 3 that variation in one region of the inauthenticity—authenticity continuum was more impactful than variation in the other region. Therefore, we operationalized the continuum in terms of its polar opposites, by contrasting the *inauthenticity condition* with the *authenticity condition*.

### 8.1. Method

#### 8.1.1. Participants

We conducted an a priori power analysis in G\*Power 3.1 (Faul et al., 2007). We aimed for 80% power, assuming a two-sided test, and an alpha level of 0.05. For our effect size estimate, we used the effect size for the comparison between authenticity and inauthenticity from Study 3 (Cohen’s  $d = 0.31$  or  $f = 0.15$ ). Three hundred thirty-four participants were needed to detect effects of this magnitude. We oversampled to account for attrition and recruited 430 U.K. residents via Prolific, an online crowdsourcing platform. Sixteen participants failed an attention check,<sup>6</sup> leaving 414 in the sample. Participants were 19–79 years old ( $M = 31.89, SD = 11.91$ ). Most of them were female ( $n = 297, 71.74\%$ ), White ( $n = 360, 86.96\%$ ), non-Hispanic ( $n = 412, 99.52\%$ ), and educated beyond high school ( $n = 347, 83.82\%$ ).

#### 8.1.2. Procedure

We used the same authenticity manipulation and manipulation check as in Study 3 (omitting the control condition from Study 3). We randomly assigned participants to the authenticity ( $n = 214$ ) or inauthenticity ( $n = 200$ ) condition. Following the manipulation check ( $M = 5.45, SD = 1.48, \alpha = 0.96$ ), we assessed PWB with the 54-item CIT (Su et al., 2014;  $M = 3.51, SD = 0.54, \alpha = 0.96$ ). The CIT measures PWB across seven theoretically relevant domains: (1) relationship flourishing (e.g., “There are people who give me support and encouragement”;  $M = 3.45, SD = 0.55, \alpha = 0.89$ ), (2) interest/engagement in daily activities (e.g., “I get fully absorbed in activities I do”;  $M = 3.68, SD = 0.63, \alpha = 0.63$ ), (3) mastery (e.g., “I believe that I am capable in most things”;  $M = 3.53, SD = 0.58, \alpha = 0.89$ ), (4) autonomy (e.g., “The life choices I make are not really mine”;  $M = 3.76, SD = 0.81, \alpha = 0.80$ ), (5) meaning in life (e.g., “I know what gives meaning to my life”;  $M = 3.48, SD = 0.82, \alpha = 0.80$ ), (6) optimism (e.g., “I have a positive outlook on life”;  $M = 3.62, SD = 0.81, \alpha = 0.81$ ), and (7) subjective wellbeing (e.g., “I am satisfied with my life”;  $M = 3.44, SD = 0.83, \alpha = 0.94$ ).

### 8.2. Results

#### 8.2.1. Manipulation check

As intended, participants in the authenticity condition ( $M = 5.71, SD = 1.17$ ) reported feeling more authentic than those in the inauthenticity condition ( $M = 5.18, SD = 1.71$ ),  $F(1, 412) = 13.83, p < .001, \eta^2 = 0.032$ .

<sup>6</sup> The attention check was “I am currently attending a college/university that does not exist” (1 = *strongly agree*, 7 = *strongly disagree*). We omitted from analyses participants ( $n = 16$ ) who scored below the midpoint. Their inclusion does not alter the results.



**Table 4**  
Means, standard deviations, and effect sizes for Study 4.

Domain	Authenticity	Inauthenticity	<i>F</i>	<i>d</i>
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )		
Relationship	3.50 (0.54)	3.39 (0.55)	3.99*	0.20
Engagement	3.76 (0.58)	3.59 (0.67)	7.46**	0.27
Mastery	3.59 (0.54)	3.48 (0.63)	3.65 <sup>†</sup>	0.19
Autonomy	3.85 (0.77)	3.67 (0.85)	5.37*	0.23
Meaning	3.59 (0.78)	3.37 (0.84)	7.53**	0.27
Optimism	3.66 (0.77)	3.57 (0.84)	1.55	0.12
Subjective Wellbeing	3.53 (0.74)	3.35 (0.90)	4.97*	0.22

Note. <sup>†</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

### 8.2.2. Psychological wellbeing

To evaluate whether authenticity induces domain-general or domain-specific PWB, we conducted a Condition (authenticity vs. inauthenticity)  $\times$  PWB Domains mixed ANOVA (Table 4 and Fig. 3). We observed a main effect of condition such that participants in the authenticity condition reported higher PWB than those in the inauthenticity condition,  $F(1, 412) = 7.58, p = .006, \eta^2 = 0.018$ . Sensitivity analysis in G\*Power 3.1 (Faul et al., 2007) suggests that the minimum effect size we are able to detect with 414 participants, 80% power, and  $\alpha = 0.05$  is  $f = 0.138$ . The obtained effect size  $\eta^2 = 0.018$  translates to  $f = 0.136$  and our post-hoc power level was 79%. We also observed a within-subjects main effect of PWB domains,  $F(6, 2460) = 25.78, p < .001, \eta^2 = 0.059$ . (We report exploratory comparisons between domains in Supplemental Material, Table 3S.) The Condition  $\times$  PWB domain interaction was not significant,  $F(6, 2460) = 0.95, p = .460, \eta^2 = 0.002$ , indicating that the effect of authenticity (vs. inauthenticity) on PWB did not vary significantly across domains.

### 8.3. Discussion

Authenticity increased PWB across the measured domains. The presence of a main effect and absence of an interaction effect indicate that the PWB effects of authenticity are domain-general rather than domain-specific. These results further bolster a causal model whereby authenticity mediates the link between nostalgia and PWB.

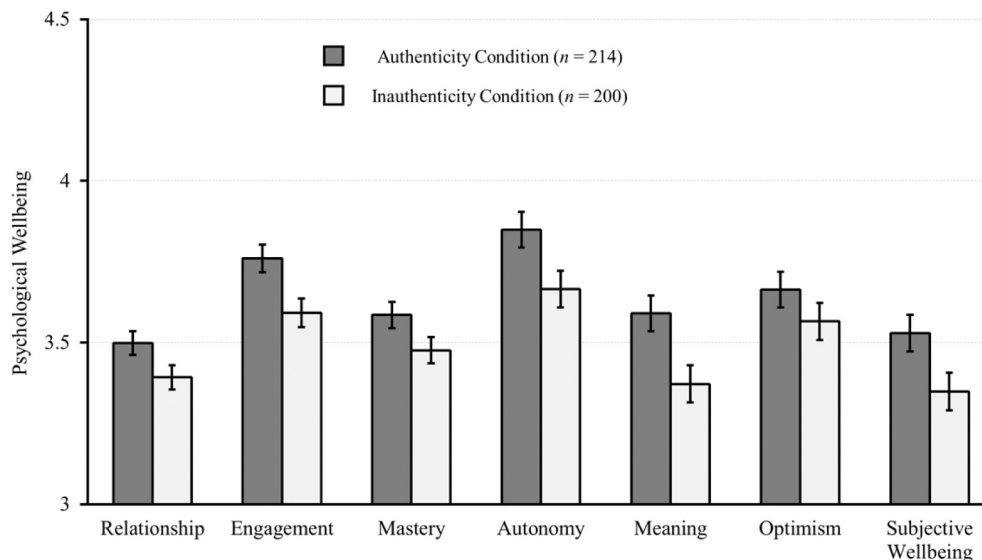
## 9. General discussion

This research represents the first attempt to address systematically the path from nostalgia to PWB through authenticity. Four studies yielded results consistent with the hypothesis that authenticity transmits, at least in part, nostalgia's effect on PWB. In a measurement-of-mediation design, trait nostalgia was associated with authenticity, which was related to greater PWB. Further this indirect effect was invariant across cultures (Study 1). Next, following an experimental-causal-chain design, induced nostalgia increased authenticity and indirectly increased PWB (Study 2). As in Study 1, these effects were invariant across cultures. In addition, the effects of induced nostalgia on authenticity were not explained by the positive affect content of narratives. Finally, authenticity causally impacted PWB in Western samples (Studies 3–4).

### 9.1. Implications for nostalgia

Previous research has taken a fragmentary approach to studying the influence of nostalgia on PWB. Nostalgizing has been shown to enhance social relationships (Abeyta et al., 2015; Wildschut et al., 2010), vitality (Sedikides et al., 2016; Wulf et al., 2020), competence (Weinstein et al., 2013; Wulf et al., 2020), meaning in life (Routledge et al., 2012; Sedikides et al., 2018), optimism (Cheung et al., 2013; Evans et al., 2021), and subjective wellbeing (Cox et al., 2015; Zhou et al., 2022). The present work took a broader perspective (Su et al., 2014), indicating that psychological thriving is more than the mere presence of any one PWB indicator. Rather, thriving represents the presence and activation of most, if not all, of these indicators. Thus, we showed, for the first time, that nostalgia instills a general sense of psychological thriving.

Our work has implications for process models of nostalgia's benefits. The literature has explored several mechanisms that may underlie nostalgia's effects on PWB, but not authenticity. In fact, few studies have even explored the causal role of nostalgia in fostering authenticity. Some research has examined similar concepts, such as nostalgia increasing the accessibility of the intrinsic self (Baldwin et al., 2015, Study 5)—a construct similar to perceived true self-knowledge (Schlegel et al., 2013). Other research (Sheldon et al., 1997; Turner & Billings, 1991) has emphasized the relevance of behavioral expression of the true self to authenticity. Here, we demonstrated that nostalgia directly increases felt authenticity (Study 2).



**Fig. 3.** The effect of authenticity on domains of psychological wellbeing (Study 4).

Note. Error bars reflect standard errors of the mean. We measured PWB with the CIT (Su et al., 2014).

On the face of it, authenticity appears similar to another construct relevant to the relation between nostalgia and PWB, self-continuity. As mentioned in the Introduction, self-continuity mediates the effect of nostalgia on an aspect of PWB, vitality (Sedikides et al., 2016). However, the two constructs are distinct. Authenticity refers to the sense that one is their true self, regardless of whether this sense is chronologically integrated. Continuity refers to the sense of connection between one's past and present self, or present and future self, or past, present, future self (Hong et al., 2021, 2022; Sedikides et al., 2022). Such a sense of connection does not necessarily reflect the true self. The difference between the two constructs is highlighted by findings that self-continuity is a consequent of nostalgia-induced authenticity (Lasaleta & Loveland, 2019). Regardless, further investigations are needed to chart a more detailed psychological map from nostalgia to PWB.

### 9.2. Implications for authenticity

Our work has implications for the authenticity literature. Prior research on the link between authenticity and PWB has been largely correlational (Thomaes et al., 2017). Experiments are scarce and focused on relatively narrow domains of authenticity. For example, Schlegel et al. (2013, Study 5) manipulated perceived true self-knowledge. Participants provided either five or 14 descriptors of the true self. Providing five (compared to 14) descriptors is relatively easy, so participants assigned to this task view their true self-knowledge as high compared to those burdened with the more difficult task of generating 14 descriptions (i.e., a fluency manipulation). However, true self-knowledge is neither a necessary nor a sufficient condition for felt authenticity (Lenton, Bruder, et al., 2013; Lenton, Slabu, et al., 2013). Our work complements prior research by focusing on felt authenticity.

Additionally, researchers have addressed the aftereffects of authenticity on outcomes that are related to, but are conceptually distinct from, PWB (e.g., decision satisfaction; Schlegel et al., 2013). We advanced this literature in several ways. First, we offered an experimental manipulation that evokes authenticity above and beyond narrow aspects such as true self-knowledge. Second, we assessed the consequences of this manipulation on a comprehensive array of PWB indicators. Third, we found that authenticity induces domain-general rather than domain-specific PWB.

### 9.3. Limitations

We obtained support for the hypothesis that authenticity mediates the link between nostalgia and PWB. We focused our investigation on subjective markers of authenticity and, hence, are unable to speak to the mediational role of objective markers. In addition to making people feel more authentic, can nostalgizing make people behave more authentically? In turn, can greater objective authenticity increase PWB? One way to address these questions would be to integrate objective measures of authenticity, such as cross-situational behavioral consistency (Fleeson & Wilt, 2010), into future nostalgia research. Follow-up work should examine whether nostalgia interventions can engender greater cross-situational behavioral consistency, culminating in higher PWB. Finally, future research using daily diary and experience sampling methodologies can substantiate the ecological validity of our findings by clarifying the extent to which authenticity mediates the link between nostalgia and PWB in daily life (Newman et al., 2020).

## 10. Conclusions

Nostalgic reverie inspired Odysseus to embark upon a long and arduous journey home. Along the way, he gained insights into his authentic self, which literally and figuratively guided his way back. The present research was the first to show systematically that, as Homer foretold, authenticity links nostalgia to PWB.

## Open practices

The experiment in this article earned Open Materials and Open Data badges for transparent practices. Materials and data for the experiment are available on the Open Science Framework.

## Funding

The authors received no financial support for the research or publication of this article. The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. Portions of the findings were presented at 21st Annual Society for Personality and Social Psychology convention, Atlanta, GA, USA.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jesp.2022.104379>.

## References

- Aberson, C. L., Bostyn, D. H., Carpenter, T., Conrique, B. G., Giner-Sorolla, R., Lewis, N. A., Jr., Montoya, A. M., Ng, B. W., Reifman, A., Schoemann, A. M., & Soderberg, C. (2020). Techniques and solutions for sample size determination in psychology: Supplementary material for "power to detect what? Considerations for planning and evaluating sample size". Retrieved from <https://osf.io/9bt5s/>.
- Abeyta, A. A., & Routledge, C. (2016). Fountain of youth: The impact of nostalgia on youthfulness and implications for health. *Self and Identity, 15*(3), 356–369. <https://doi.org/10.1080/15298868.2015.1133452>
- Abeyta, A. A., Routledge, C., & Juhl, J. (2015). Looking back to move forward: Nostalgia as a psychological resource for promoting relationship goals and overcoming relationship challenges. *Journal of Personality and Social Psychology, 109*(6), 1029–1044. <https://doi.org/10.1037/pspi0000036>
- Abeyta, A. A., Routledge, C., & Kaslon, S. (2020). Combating loneliness with nostalgia: Nostalgic feelings attenuate negative thoughts and motivations associated with loneliness. *Frontiers in Psychology, 11*, 1219. <https://doi.org/10.3389/fpsyg.2020.01219>
- Baker, Z. G., Tou, R. Y., Bryan, J. L., & Knee, C. R. (2017). Authenticity and well-being: Exploring positivity and negativity in interactions as a mediator. *Personality and Individual Differences, 100*(113), 235–239. <https://doi.org/10.1016/j.paid.2017.03.018>
- Baldwin, M., Biernat, M., & Landau, M. J. (2015). Remembering the real me: Nostalgia offers a window to the intrinsic self. *Journal of Personality and Social Psychology, 108* (1), 128–147. <https://doi.org/10.1037/a0038033>
- Baldwin, M., & Landau, M. J. (2014). Exploring nostalgia's influence on psychological growth. *Self and Identity, 13*(2), 162–177. <https://doi.org/10.1080/15298868.2013.772320>
- Batcho, K. I. (1995). Nostalgia: A psychological perspective. *Perceptual and Motor Skills, 80*(1), 131–143. <https://doi.org/10.2466/pms.1995.80.1.131>
- Batcho, K. I. (2007). Nostalgia and the emotional tone and content of song lyrics. *The American Journal of Psychology, 120*(3), 361–381. <https://doi.org/10.2307/20445410>
- Batcho, K. I. (2013). Nostalgia: Retreat or support in difficult times? *The American Journal of Psychology, 126*(3), 355–367. <https://doi.org/10.5406/amerjpsyc.126.3.0355>
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497–529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Biskas, M., Cheung, W.-Y., Juhl, J., Sedikides, C., Wildschut, T., & Hepper, E. (2019). A prologue to nostalgia: Savouring creates nostalgic memories that foster optimism. *Cognition and Emotion, 33*(3), 417–427. <https://doi.org/10.1080/02699931.2018.1458705>
- Boyd, R. L., Ashokkumar, A., Seraj, S., & Pennebaker, J. W. (2022). *The development and psychometric properties of LIWC-22*. The University of Texas at Austin. <https://www.liwc.app>.
- Brunell, A. B., Kernis, M. H., Goldman, B. M., Heppner, W., Davis, P., Cascio, E. V., & Webster, G. D. (2010). Dispositional authenticity and romantic relationship functioning. *Personality and Individual Differences, 48*(8), 900–905. <https://doi.org/10.1016/j.paid.2010.02.018>
- Bryant, F. B., Smart, C. M., & King, S. P. (2005). Using the past to enhance the present: Boosting happiness through positive reminiscence. *Journal of Happiness Studies, 6*(3), 227–260. <https://doi.org/10.1007/s10902-005-3889-4>
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56*(2), 81–105. <https://doi.org/10.1037/h0046016>
- Campbell, J. (1949). *The hero with a thousand faces*. Princeton University.
- Chen, S. (2019). Authenticity in context: Being true to working selves. *Review of General Psychology, 23*(1), 60–72. <https://doi.org/10.1037/gpr0000160>

- Cheung, W.-Y., Hepper, E. G., Reid, C. A., Green, J. D., Wildschut, T., & Sedikides, C. (2020). Anticipated nostalgia: Looking forward to looking back. *Cognition and Emotion*, 34(3), 511–525. <https://doi.org/10.1080/02699931.2019.1649247>
- 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(11), 1484–1496. <https://doi.org/10.1177/0146167213499187>
- Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (2nd ed.). Erlbaum.
- Cox, C. R., Kersten, M., Routledge, C., Brown, E. M., & Van Enkevort, E. A. (2015). When past meets present: The relationship between website-induced nostalgia and well-being. *Journal of Applied Social Psychology*, 45(5), 282–299. <https://doi.org/10.1111/jasp.12295>
- Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52(4), 281–302. <https://doi.org/10.1037/h0040957>
- Diamantopoulos, A., Sarstedt, M., Fuchs, C., Wilczynski, P., & Kaiser, S. (2012). Guidelines for choosing between multi-item and single-item scales for construct measurement: A predictive validity perspective. *Journal of the Academy of Marketing Science*, 40(3), 434–449. <https://doi.org/10.1007/s11747-011-0300-3>
- Diener, E. (2000). Subjective wellbeing: The science of happiness and a proposal for a national index. *American Psychologist*, 55(1), 34–43. <https://doi.org/10.1037/0003-066X.55.1.34>
- Evans, N. D., Reyes, J., Wildschut, T., Sedikides, C., & Fetterman, A. K. (2021). Mental transportation mediates nostalgia's psychological benefits. *Cognition and Emotion*, 35(1), 84–95. <https://doi.org/10.1080/02699931.2020.1806788>
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G\* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175–191. <https://doi.org/10.3758/BF03193146>
- Fleeson, W., & Wilt, J. (2010). The relevance of big five trait content in behavior to subjective authenticity: Do high levels of within-person behavioral variability undermine or enable authenticity achievement? *Journal of Personality*, 78(4), 1353–1382. <https://doi.org/10.1111/j.1467-6494.2010.00653.x>
- Frankenbach, J., Wildschut, T., Juhl, J., & Sedikides, C. (2021). Does neuroticism disrupt the psychological benefits of nostalgia? A meta-analytic test. *European Journal of Personality*, 35(2), 249–266. <https://doi.org/10.1002/per.2276>
- Goldman, B. M., & Kernis, M. H. (2002). The role of authenticity in healthy psychological functioning and subjective wellbeing. *Annals of the American Psychotherapy Association*, 5(6), 18–20.
- Hayes, A. F. (2015). An index and test of linear moderated mediation. *Multivariate Behavioral Research*, 50(1), 1–22. <https://doi.org/10.1080/00273171.2014.962683>
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.
- 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(1), 102–119. <https://doi.org/10.1037/a0025167>
- Hepper, E. G., Wildschut, T., Sedikides, C., Ritchie, T. D., Yung, Y.-F., Hansen, N., Abakoumkin, G., Arkan, G., Cisek, S. Z., Demassosso, D. B., Gebauer, J. E., Gerber, J. P., González, R., Kusumi, T., Misra, G., Rusu, M., Ryan, O., Stephan, E., Vingerhoets, A. J. J. M., & Zhou, X. (2014). Pancultural nostalgia: Prototypical conceptions across cultures. *Emotion*, 14(4), 733–747. <https://doi.org/10.1037/a0036790>
- Hepper, E. G., Wildschut, T., Sedikides, C., Robertson, S., & Routledge, C. D. (2021). Time capsule: Nostalgia shields psychological wellbeing from limited time horizons. *Emotion*, 21(3), 644–664. <https://doi.org/10.1037/emo0000728>
- Heppner, W. L., Kernis, M. H., Nezelek, J. B., Foster, J., Lakey, C. E., & Goldman, B. M. (2008). Within-person relationships among daily self-esteem, need satisfaction, and authenticity. *Psychological Science*, 19(11), 1140–1145. <https://doi.org/10.1111/j.1467-9280.2008.02215.x>
- Hong, E. K., Sedikides, C., & Wildschut, T. (2021). Nostalgia strengthens global self-continuity through holistic thinking. *Cognition and Emotion*, 35(4), 730–737. <https://doi.org/10.1080/02699931.2020.1862064>
- Hong, E. K., Sedikides, C., & Wildschut, T. (2022). How does nostalgia conduce to self-continuity? The roles of identity narrative, associative links, and stability. *Personality and Social Psychology Bulletin*, 48(5), 735–749. <https://doi.org/10.1177/01461672211024889>
- Hotchin, V. (2020). Reflecting on nostalgic, positive and novel experiences increases state openness. *Journal of Personality*, 89(2), 258–275. <https://doi.org/10.1111/jopy.12580>
- Huang, C. L., Chung, C. K., Hui, N., Lin, Y. C., Seih, Y. T., Lam, B. C., & Pennebaker, J. W. (2012). The development of the Chinese linguistic inquiry and word count dictionary. *Chinese Journal of Psychology*.
- Ionescu, D., & Iacob, C. (2019). Self-authenticity, optimism, and neuroticism in relation to basic psychological needs. *Romanian Journal of Psychology*, 21(1), 28–34. <https://doi.org/10.24913/rjap.21.1.05>
- Juhl, J., Wildschut, T., Sedikides, C., Diebel, T., Cheung, W.-Y., & Vingerhoets, A. J. J. M. (2020). Nostalgia proneness and empathy: Generality, underlying mechanism, and implications for prosocial behavior. *Journal of Personality*, 88(3), 485–500. <https://doi.org/10.1111/jopy.12505>
- Kahn, J. H., Tobin, R. M., Massey, A. E., & Anderson, J. A. (2007). Measuring emotional expression with the linguistic inquiry and word count. *American Journal of Psychology*, 120(2), 263–286.
- Kenny, D. A. (2017). MedPower: An interactive tool for the estimation of power in tests of mediation [Computer software]. Available from <https://davidakenny.shinyapps.io/PowerMed>.
- Kersten, M., Cox, C. R., & Van Enkevort, E. A. (2016). An exercise in nostalgia: Nostalgia promotes health optimism and physical activity. *Psychology & Health*, 31(10), 1166–1181. <https://doi.org/10.1080/08870446.2016.1185524>
- Kifer, Y., Heller, D., Perunovic, W. Q. E., & Galinsky, A. D. (2013). The good life of the powerful: The experience of power and authenticity enhances subjective well-being. *Psychological Science*, 24(3), 280–288. <https://doi.org/10.1177/0956797612450891>
- Lasaleta, J. D., & Loveland, K. E. (2019). What's new is old again: Nostalgia and retro-styling in response to authenticity threats. *Journal of the Association for Consumer Research*, 4(2), 172–184. <https://doi.org/10.1086/702473>
- Layous, K., Kurtz, J. L., Wildschut, T., & Sedikides, C. (2021). The effect of a multi-week nostalgia intervention on well-being: Mechanisms and moderation. *Emotion*. <https://doi.org/10.1037/emo0000817>. Advance online publication.
- Lenton, A. P., Bruder, M., Slabu, L., & Sedikides, C. (2013a). How does “being real” feel? The experience of state authenticity. *Journal of Personality*, 81(3), 276–289. <https://doi.org/10.1111/j.1467-6494.2012.00805.x>
- Lenton, A. P., Slabu, L., Sedikides, C., & Power, K. (2013b). I feel good, therefore I am real: Testing the causal influence of mood on state authenticity. *Cognition and Emotion*, 27(7), 1202–1224. <https://doi.org/10.1080/02699931.2013.778818>
- Leunissen, J. M., Wildschut, T., Sedikides, C., & Routledge, C. (2021). The hedonic character of nostalgia: An integrative data analysis. *Emotion Review*, 13(2), 139–156. <https://doi.org/10.1177/1754073920950455>
- Leys, C., Klein, O., Dominicy, Y., & Ley, C. (2018). Detecting multivariate outliers: Use a robust variant of the Mahalanobis distance. *Journal of Experimental Social Psychology*, 74, 150–156. <https://doi.org/10.1016/j.jesp.2017.09.011>
- Leys, C., Ley, C., Klein, O., Bernard, P., & Licata, L. (2013). Detecting outliers: Do not use standard deviation around the mean, use absolute deviation around the median. *Journal of Experimental Social Psychology*, 49(4), 764–766. <https://doi.org/10.1016/j.jesp.2013.03.013>
- Lonati, S., Quiroga, B. F., Zehnder, C., & Antonakis, J. (2018). On doing relevant and rigorous experiments: Review and recommendations. *Journal of Operations Management*, 64(1), 19–40. <https://doi.org/10.1016/j.jom.2018.10.003>
- Luo, Y. L., Wildschut, T., Sedikides, C., & Cai, H. (2022). Nostalgia and satisfaction with life: A behavioral genetics analysis. *Journal of Happiness Studies*. <https://doi.org/10.1007/s10902-022-00548-9>. Advance online publication.
- Madoglou, A., Gkinopoulos, T., Xanthopoulos, P., & Kalamaras, D. (2017). Representations of autobiographical nostalgic memories: Generational effect, gender, nostalgia proneness and communication of nostalgic experiences. *Journal of Integrated Social Sciences*, 7, 60–88.
- Newman, D. B., Sachs, M. E., Stone, A. A., & Schwarz, N. (2020). Nostalgia and wellbeing in daily life: An ecological validity perspective. *Journal of Personality and Social Psychology*, 118(2), 325–347. <https://doi.org/10.1037/pspp0000236>
- Pearsall, J. (Ed.). (1998). *The new Oxford dictionary of English*. Oxford University Press.
- Pirlott, A. G., & MacKinnon, D. P. (2016). Design approaches to experimental mediation. *Journal of Experimental Social Psychology*, 66(9), 29–38. <https://doi.org/10.1016/j.jesp.2015.09.012>
- Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods*, 16(2), 93–115. <https://doi.org/10.1037/a0022658>
- Qiu, L., Lu, J., Ramsay, J., Yang, S., Qu, W., & Zhu, T. (2017). Personality expression in Chinese language use. *International Journal of Psychology*, 52(6), 463–472.
- Qiu, L., Chen, J., Ramsay, J., & Lu, J. (2019). Personality predicts words in favorite songs. *Journal of Research in Personality*, 78, 25–35.
- Reid, C. A., Green, J. D., Wildschut, T., & Sedikides, C. (2015). Scent-evoked nostalgia. *Memory*, 23(2), 157–166. <https://doi.org/10.1080/09658211.2013.876048>
- Richard, F. D., Bond, C. F., Jr., & Stokes-Zoota, J. J. (2003). One hundred years of social psychology quantitatively described. *Review of General Psychology*, 7(4), 331–363. <https://doi.org/10.1037/1089-2680.7.4.331>
- Rivera, G. N., Christy, A. G., Kim, J., Vess, M., Hicks, J. A., & Schlegel, R. J. (2019). Understanding the relationship between perceived authenticity and wellbeing. *Review of General Psychology*, 23(1), 113–126. <https://doi.org/10.1037/gpr0000161>
- Routledge, C., Arndt, J., Sedikides, C., & Wildschut, T. (2008). A blast from the past: The terror management function of nostalgia. *Journal of Experimental Social Psychology*, 44(1), 132–140. <https://doi.org/10.1016/j.jesp.2006.11.001>
- Routledge, C., Arndt, J., Wildschut, T., Sedikides, C., Hart, C. M., Juhl, J., Vingerhoets, A. J. J. M., & Schlotz, W. (2011). The past makes the present meaningful: Nostalgia as an existential resource. *Journal of Personality and Social Psychology*, 101(3), 638–652. <https://doi.org/10.1037/a0024292>
- Routledge, C., Juhl, J., Abeyta, A., & Roylance, C. (2014). Using the past to promote a peaceful future: Nostalgia proneness mitigates existential threat induced nationalistic self-sacrifice. *Social Psychology*, 45(5), 339–346. <https://doi.org/10.1027/1864-9335/a000172>
- Routledge, C., Wildschut, T., Sedikides, C., & Juhl, J. (2013). Nostalgia as a resource for psychological health and well-being. *Social and Personality Psychology Compass*, 7(11), 808–818. <https://doi.org/10.1111/spc3.12070>
- Routledge, C., Wildschut, T., Sedikides, C., Juhl, J., & Arndt, J. (2012). The power of the past: Nostalgia as a meaning-making resource. *Memory*, 20(5), 452–460. <https://doi.org/10.1080/09658211.2012.677452>
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52(1), 141–166. <https://doi.org/10.1146/annurev.psych.52.1.141>
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.
- Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, 65(3), 529–565. <https://doi.org/10.1111/j.1467-6494.1997.tb00326.x>



- Ryan, W. S., & Ryan, R. M. (2019). Toward a social psychology of authenticity: Exploring within-person variation in autonomy, congruence, and genuineness using self-determination theory. *Review of General Psychology*, 23(1), 99–112. <https://doi.org/10.1037/gpr0000162>
- Schlegel, R. J., Hicks, J. A., Arndt, J., & King, L. A. (2009). Thine own self: True self-concept accessibility and meaning in life. *Journal of Personality and Social Psychology*, 96(2), 473–490. <https://doi.org/10.1037/a0014060>
- Schlegel, R. J., Hicks, J. A., Davis, W. E., Hirsch, K. A., & Smith, C. M. (2013). The dynamic interplay between perceived true self-knowledge and decision satisfaction. *Journal of Personality and Social Psychology*, 104(3), 542–558. <https://doi.org/10.1037/a0031183>
- Schlegel, R. J., Hicks, J. A., King, L. A., & Arndt, J. (2011). Feeling like you know who you are: Perceived true self-knowledge and meaning in life. *Personality and Social Psychology Bulletin*, 37(6), 745–756. <https://doi.org/10.1177/0146167211400424>
- Schmader, T., & Sedikides, C. (2018). State authenticity as fit to environment (SAFE): The implications of social identity for fit, authenticity, and self-segregation. *Personality and Social Psychology Review*, 22(3), 228–259. <https://doi.org/10.1177/1088868317734080>
- 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(2), 209–216. <https://doi.org/10.1002/ejsp.2318>
- Sedikides, C., Hong, E., & Wildschut, T. (2022). Self-continuity. *Annual Review of Psychology*.
- Sedikides, C., Lenton, A. P., Slabu, L., & Thomaes, S. (2019). Sketching the contours of state authenticity. *Review of General Psychology*, 23(1), 73–88. <https://doi.org/10.1037/gpr0000156>
- Sedikides, C., Slabu, L., Lenton, A., & Thomaes, S. (2017). State authenticity. *Current Directions in Psychological Science*, 26(6), 521–525. <https://doi.org/10.1177/0963721417713296>
- 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. 25–36). Wiley Blackwell. <https://doi.org/10.1002/9781118468197.ch9>
- Sedikides, C., & Wildschut, T. (2018). Finding meaning in nostalgia. *Review of General Psychology*, 22(1), 48–61. <https://doi.org/10.1037/gpr0000109>
- Sedikides, C., & Wildschut, T. (2019). The sociality of personal and collective nostalgia. *European Review of Social Psychology*, 30(1), 123–173. <https://doi.org/10.1080/10463283.2019.1630098>
- Sedikides, C., Wildschut, T., Cheung, W.-Y., Routledge, C., Hepper, E. G., Arndt, J., Vaill, K., Zhou, X., Brackstone, K., & Vingerhoets, A. J. J. M. (2016). Nostalgia fosters self-continuity: Uncovering the mechanism (social connectedness) and consequence (eudaimonic well-being). *Emotion*, 16(4), 524–539. <https://doi.org/10.1037/emo0000136>
- 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>
- Seehusen, J., Cordaro, F., Wildschut, T., Sedikides, C., Routledge, C., Blackhart, G. C., Epstude, K., & Vingerhoets, A. J. J. M. (2013). Individual differences in nostalgia proneness: The integrating role of the need to belong. *Personality and Individual Differences*, 55(8), 904–908. <https://doi.org/10.1016/j.paid.2013.07.020>
- Sheldon, K. M., Ryan, R. M., Rawsthorne, L. J., & Ilardi, B. (1997). Trait self and true self: Cross-role variation in the big-five personality traits and its relations with psychological authenticity and subjective well-being. *Journal of Personality and Social Psychology*, 73(6), 1380–1393. <https://doi.org/10.1037/0022-3514.73.6.1380>
- 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(6), 845–851. <https://doi.org/10.1037/0022-3514.89.6.845>
- 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(3), 290–298. <https://doi.org/10.1002/ejsp.1865>
- Su, R., Tay, L., & Diener, E. (2014). The development and validation of the comprehensive inventory of thriving (CIT) and the brief inventory of thriving (BIT). *Applied Psychology: Health and Well-Being*, 6(3), 251–279. <https://doi.org/10.1111/aphw.12027>
- Sutton, A. (2020). Living the good life: A meta-analysis of authenticity, well-being and engagement. *Personality and Individual Differences*, 153, Article 109645. <https://doi.org/10.1016/j.paid.2019.109645>
- Tekin, G. (2014). An investigation of the predictive role of authenticity on subjective vitality. *Educational Sciences: Theory and Practice*, 14(6), 2063–2070. <https://doi.org/10.12738/estp.2014.6.2216>
- Thomaes, S., Sedikides, C., Van den Bos, N., Hutteman, R., & Reijntjes, A. (2017). Happy to be “me?” authenticity, psychological need satisfaction, and subjective well-being in adolescence. *Child Development*, 88(4), 1045–1056. <https://doi.org/10.1111/cdev.12867>
- Turner, J. R., & Stanley, J. T. (2021). Holding on to pieces of the past: Daily reports of nostalgia in a life-span sample. *Emotion*, 21(5), 951–961. <https://doi.org/10.1037/emo0000980>
- Turner, R. H., & Billings, V. (1991). The social contexts of self-feeling. In J. A. Howard, & P. L. Callero (Eds.), *The self-society dynamic: Cognition, emotion, and action* (pp. 103–122). Cambridge University Press.
- Turner, R. N., Wildschut, T., & Sedikides, C. (2012). Dropping the weight stigma: Nostalgia improves attitudes toward persons who are overweight. *Journal of Experimental Social Psychology*, 48(1), 130–137. <https://doi.org/10.1016/j.jesp.2011.09.007>
- Turner, R. N., Wildschut, T., & Sedikides, C. (2018). Fighting ageism through nostalgia. *European Journal of Social Psychology*, 48(2), 196–208. <https://doi.org/10.1002/ejsp.2317>
- Van Tilburg, W. A. P., Igou, E. R., & Sedikides, C. (2013). In search of meaningfulness: Nostalgia as an antidote to boredom. *Emotion*, 13(3), 450–461. <https://doi.org/10.1037/a0030442>
- Van Tilburg, W. A. P., Sedikides, C., Wildschut, T., & Vingerhoets, A. J. J. M. (2019). How nostalgia infuses life with meaning: From social connectedness to self-continuity. *European Journal of Social Psychology*, 49(3), 521–532. <https://doi.org/10.1002/ejsp.2519>
- Vess, M. (2019). Varieties of conscious experience and the subjective awareness of one’s “true” self. *Review of General Psychology*, 23(1), 89–98. <https://doi.org/10.1177/1089268019829471>
- Vess, M., Arndt, J., Routledge, C., Sedikides, C., & Wildschut, T. (2012). Nostalgia as a resource for the self. *Self and Identity*, 11(3), 273–284. <https://doi.org/10.1080/15298868.2010.521452>
- Weinstein, N., Legate, N., & Przybylski, A. K. (2013). Beauty is in the eye of the psychologically fulfilled: How need satisfying experiences shape aesthetic perceptions of spaces. *Motivation and Emotion*, 37(2), 245–260. <https://doi.org/10.1007/s11031-012-9312-7>
- Weinstein, N., Nguyen, T. V., Wildschut, T., & Sedikides, C. (2022). *The good old (autonomy-rich) days: Recalling autonomy-rich memories elicits nostalgia and fosters self-continuity*. Manuscript under review: University of Reading.
- Wildschut, T., & Sedikides, C. (2022a). Psychology and nostalgia: Towards a functional approach. In M. H. Jacobsen (Ed.), *Intimations of nostalgia: Multidisciplinary explorations of an enduring emotion* (pp. 110–128). Bristol University Press.
- Wildschut, T., Sedikides, C., & Tay, L. (2022b). The measurement of nostalgia. In W. Ruch, A. B. Bakker, & F. Gander (Eds.), *European Association of Psychological Assessment Book Series Handbook of positive psychology assessment*.
- Wildschut, T., Sedikides, C., & Alowidy, D. (2019). *Hanin: Nostalgia among Syrian refugees*. *European Journal of Social Psychology*, 49(7), 1368–1384. <https://doi.org/10.1002/ejsp.2590>
- Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nostalgia: Content, triggers, functions. *Journal of Personality and Social Psychology*, 91(5), 975–993. <https://doi.org/10.1037/0022-3514.91.5.975>
- Wildschut, T., Sedikides, C., Routledge, C., Arndt, J., & Cordaro, F. (2010). Nostalgia as a repository of social connectedness: The role of attachment-related avoidance. *Journal of Personality and Social Psychology*, 98(4), 573–586. <https://doi.org/10.1037/a0017597>
- Wood, A. M., Linley, P. A., Maltby, J., Baliousis, M., & Joseph, S. (2008). The authentic personality: A theoretical and empirical conceptualization and the development of the authenticity scale. *Journal of Counseling Psychology*, 55(3), 385–399. <https://doi.org/10.1037/0022-0167.55.3.385>
- Wulf, T., Bowman, N. D., Velez, J. A., & Breuer, J. (2020). Once upon a game: Exploring video game nostalgia and its impact on well-being. *Psychology of Popular Media*, 9(1), 83–95. <https://doi.org/10.1037/ppm0000208>
- Ye, S., Ng, T. K., & Lam, C. L. (2018). Nostalgia and temporal life satisfaction. *Journal of Happiness Studies*, 19(6), 1749–1762. <https://doi.org/10.1007/s10902-017-9884-8>
- Zhou, X., Sedikides, C., Mo, T., Li, W., Hong, E., & Wildschut, T. (2022). The restorative power of nostalgia: Thwarting loneliness by raising happiness during the COVID-19 pandemic. *Social Psychological and Personality Science*, 13(4), 803–815. <https://doi.org/10.17605/OSF.IO/U5RJB>
- Zhou, X., Sedikides, C., Wildschut, T., & Gao, D. G. (2008). Counteracting loneliness: On the restorative function of nostalgia. *Psychological Science*, 19(10), 1023–1029. <https://doi.org/10.1111/j.1467-9280.2008.02194.x>
- Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-differences metric. *Journal of Personality and Social Psychology*, 77(6), 1271–1288. <https://doi.org/10.1037/0022-3514.77.6.1271>
- Zhang, H., Miao, J., Liu, Z., Wesson, I.L., & Shang, J. (2020). NLP-Parser: Making Chinese and English Semantic Analysis Easier and Complete. In *15th International Conference on the Statistical Analysis of Textual Data*.