

## The Past Makes the Present Meaningful: Nostalgia as an Existential Resource

Clay Routledge  
North Dakota State University

Jamie Arndt  
University of Missouri—Columbia

Tim Wildschut, Constantine Sedikides, and  
Claire M. Hart  
University of Southampton

Jacob Juhl  
North Dakota State University

Ad J. J. M. Vingerhoets  
Tilburg University

Wolff Schlotz  
University of Southampton

The present research tested the proposition that nostalgia serves an existential function by bolstering a sense of meaning in life. Study 1 found that nostalgia was positively associated with a sense of meaning in life. Study 2 experimentally demonstrated that nostalgia increases a sense of meaning in life. In both studies, the link between nostalgia and increased meaning in life was mediated by feelings of social connectedness. Study 3 evidenced that threatened meaning increases nostalgia. Study 4 illustrated that nostalgia, in turn, reduces defensiveness following a meaning threat. Finally, Studies 5 and 6 showed that nostalgia disrupts the link between meaning deficits and compromised psychological well-being. Collectively, these findings indicate that the provision of existential meaning is a pivotal function of nostalgia.

*Keywords:* nostalgia, meaning, well-being

Perceiving one's life as full of meaning and purpose is a hallmark of healthy psychological functioning. The perception that one's life has meaning is considered a fundamental buffer against existential anxiety (Becker, 1971; Frankl, 1959; Solomon, Greenberg, & Pyszczynski, 1991) and is associated with quality of life (King & Napa, 1998; Krause, 2007; Low & Molzahn, 2007), psychological well-being (Ryff, 1989; Steger & Frazier, 2005; Updegraff, Cohen Silver, & Holman, 2008), and coping with stress or illness (Janoff-Bulman, 1992; Jim & Andersen, 2007; C. L. Park, 2010). With a growing appreciation of the benefits of perceiving life as meaningful, it also becomes imperative to understand those human capabilities that enable life to be seen in this manner. What are the psychological processes that contribute to a sense that the lives we lead are purposeful and meaningful?

In the present research, we examined the possibility that one source of meaning in life emanates from the human capacity to think in terms of time and thus to engage in nostalgic reflection on the past. Although nostalgia has been a topic of literary interest since the epic tale of *The Odyssey* and initial theoretical considerations of nostalgia treated it as a psychological malady if not dysfunction (e.g., Fodor, 1950; McCann, 1941; Rosen, 1975), in recent years an empirical approach has begun to focus on nostalgia's beneficial psychological functions. In particular, Sedikides, Wildschut, and Baden (2004) proposed, and a subsequent series of studies (Wildschut, Sedikides, Arndt, & Routledge, 2006) demonstrated, that nostalgic engagement elevates positive mood, boosts self-esteem, and strengthens social connectedness. In addition to these three functions, Sedikides et al. (2004) also proposed that nostalgia serves a fourth function—to increase a sense of meaning in life (see also Routledge & Arndt, 2005; Sedikides, Wildschut, Arndt, & Routledge, 2006). To date, however, this possibility has remained largely unexplored.

The notion that nostalgia can be harnessed to imbue one's life with an overarching sense of meaning and purpose gives rise to several empirical questions. One question concerns the basic relation between nostalgia and meaning: Does nostalgia increase perceptions of meaning in life? If nostalgia increases meaning, the next pertinent question to ask is how it exerts this influence. Previous research demonstrates that nostalgia is primarily a social emotion (Wildschut et al., 2006; Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010; Zhou, Sedikides, Wildschut, & Gao, 2008), and social relationships are an important component of

---

This article was published Online First July 25, 2011.

Clay Routledge and Jacob Juhl, Department of Psychology, North Dakota State University; Jamie Arndt, Department of Psychological Sciences, University of Missouri—Columbia; Tim Wildschut, Constantine Sedikides, Claire M. Hart, and Wolff Schlotz, School of Psychology, University of Southampton, England; Ad J. J. M. Vingerhoets, Department of Developmental, Clinical, and Cross-Cultural Psychology, Tilburg University, the Netherlands.

We thank Matt Arnold for his assistance with this research.

Correspondence concerning this article should be addressed to Clay Routledge, Department of Psychology, North Dakota State University, Fargo, ND 58105-5075. E-mail: Clay.Routledge@ndsu.edu

perceiving one's life as meaningful (Arndt, Routledge, Greenberg, & Sheldon, 2005; Baumeister, 2005; Mikulincer, Florian, & Hirschberger, 2003; Williams, 2001). Thus, we examined the extent to which the hypothesized relation between nostalgia and meaning may be mediated by nostalgia's propensity to enhance social connectedness.

A dynamic conceptualization of the link between nostalgia and meaning also suggests other vantage points from which to examine this connection: Do threats to meaning instigate nostalgia? If nostalgia is an important source of meaning, then people should recruit nostalgia when the sense of meaning in life is compromised. Furthermore, if people do indeed turn to nostalgia when meaning is threatened, this, in turn, raises the important question of whether nostalgia can buffer the deleterious consequences of threatened meaning. People often respond defensively when their sense of meaning in life is undermined. Does nostalgia reduce the need to respond defensively (negatively) to meaning threats? Finally, if nostalgia bolsters meaning, can it compensate for existing meaning deficits that otherwise compromise psychological well-being? We present six studies that address these questions as a convergent means to explore the existential function of nostalgia.

### Nostalgia as a Source of Meaning

The construct of meaning is complex and can be considered at multiple levels of analysis (Arndt, Landau, Vail, & Vess, in press). In particular, researchers have studied meaning at the level of efforts to make rudimentary sense of the world in terms of basic relations between events. Researchers have also followed the existential tradition of Frankl, Sartre, and others to study meaning at the more personal level. On this level, people engage in efforts to perceive a sense of one's existence as significant and purposeful. When conceptualizing nostalgia as a meaning-making resource, Sedikides and colleagues (2004) highlighted personal meaning as the level likely to be most impacted by nostalgia, given that nostalgia refers to one's own life experiences (Wildschut et al., 2006; Wildschut, Sedikides, & Cordaro, 2011).

Extant research gives an indication that nostalgia may fortify personal meaning in life. Routledge, Arndt, Sedikides, and Wildschut (2008) and Juhl, Routledge, Arndt, Sedikides, and Wildschut (2010) examined nostalgia as a defense against the threat of death awareness. Terror management theory (TMT; Solomon et al., 1991) posits that a reason why humans seek enduring meaning in life is that they are uniquely aware of their mortal predicament; they know that death is certain. Believing, then, that one is part of something larger and more meaningful than one's own physical self provides a psychological defense against the threat of inevitable, and absolute, physical annihilation (Becker, 1973).

Building from this theoretical foundation, research has demonstrated that (a) reminders of mortality (i.e., mortality salience manipulations) increase defense of meaning-providing structures (e.g., national identity; Greenberg et al., 1990), (b) threats to meaning-providing structures increase death-thought accessibility (Schimmel, Hayes, Williams, & Jahrig, 2007), and (c) defending meaning-providing structures reduces death-thought accessibility (Arndt, Cook, & Routledge, 2004). Routledge et al. (2008) and Juhl et al. (2010) thus proposed that if nostalgia helps to embed one in a meaningful life story that offers existential protection, then both individuals high in trait nostalgia and individuals for

whom nostalgia is experimentally induced would show attenuated terror management responses after mortality salience. This pattern was obtained across multiple studies. In the Routledge et al. research, in response to reminders of death (compared with an aversive control topic), the higher participants were in trait nostalgia, the more they perceived life to be meaningful and the less death thoughts were accessible. In addition, experimentally induced nostalgia decreased death-thought accessibility after mortality salience. Furthermore, in the Juhl et al. research, in response to reminders of death, higher levels of trait nostalgia were associated with lower levels of death anxiety and ingroup-identity defense. This research thus suggested that nostalgia attenuates the existential threat of mortality awareness partly by reducing death-thought accessibility and subsequent death anxiety, and by facilitating perceptions of meaning. However, whereas the finding that nostalgia can help preserve perceptions of meaning when death is made salient supports a broader meaning function of nostalgia, this support is indirect at best. The question thus remains: Does nostalgia serve as a more generalized existential resource, helping people to view their lives as meaningful?

There are good reasons to hypothesize that nostalgia is a source of meaning in life. Wildschut et al. (2006) content analyzed written narratives of nostalgic experiences and found that nostalgic episodes refer to momentous life events. Such events often revolve around important cultural rituals, family traditions of great symbolic value, or cherished memories (Sedikides et al., 2006, 2004; Sedikides, Wildschut, Arndt, & Routledge, 2008). These are events that encapsulate deep, wholesome, and consequential life experiences—experiences that, when reflected on, may serve to impart a sense of meaning. Daily life is of course filled with a series of ordinary experiences that are important for normal functioning (e.g., driving to work, shopping for groceries, paying bills) but are perhaps not the kind of events that facilitate perceptions of meaning. Thus, waxing nostalgic about past events that stand out as personally significant (e.g., a family Christmas, cherished time with friends, playing in a championship football game) may be one method that people use to infuse life with meaning. Also, when individuals ponder questions about the greater purpose of their lives, nostalgia may provide a way to conjure up evidence that their lives have indeed been meaningful. It may be, in a sense, the self-focused emotional process through which people recollect experiences that weave a meaningful narrative around their lives.

The social component of nostalgia, in particular, is likely to constitute a driving force for enhancing meaning. Experimental evidence shows that, among other psychological consequences, nostalgia increases social connectedness. Participants who reflected on nostalgic (compared with ordinary) events from their life reported feeling more "loved" and "protected" (Wildschut et al., 2006), evidenced greater attachment security (Wildschut et al., 2006), felt more competent in interpersonal contexts (Stephan et al., 2011; Wildschut et al., 2006, 2010), had stronger perceptions of social support (Zhou et al., 2008), and empathized more with the suffering of another person (Zhou et al., 2011). Furthermore, Wildschut et al.'s (2006) content analysis of nostalgic narratives not only showed that momentous (i.e., personally meaningful) life events are a predominant subject of nostalgia but also confirmed previous findings that social connectedness is an important feature of such momentous life events (Holak & Havlena, 1992). That is, although nostalgia is self-relevant, most momentous life experi-

ences about which people wax nostalgic are social in nature (e.g., weddings, family reunions, holiday dinners). In fact, it is relatively rare to find nostalgic narratives that are predominantly asocial in nature. When such examples are found, they are indicative of narcissism (Hart et al., 2011). This association between social themes and momentous life events in the nostalgic narratives is consistent with research on meaning, which shows that family, friends, and relationship partners are primary sources of personal meaning in life (Hicks, Schlegel, & King, 2010; Lambert et al., 2010). Indeed, experimental evidence demonstrates that social threats (i.e., social exclusion) decrease perceptions of meaning (Stillman et al., 2009) and, when people face existential threat, a sense of social connectedness bolsters well-being and promotes adaptive functioning (Arndt et al., 2005). Taken together, this work suggests that enhanced social connectedness may be one mechanism through which nostalgia increases meaning.

### The Present Research

We examined the proposition that nostalgia imbues life with meaning by assessing several convergent hypotheses. To begin with, if nostalgia is a source of personal meaning, then increased nostalgia should be associated with, and lead to, increased meaning. Studies 1 and 2 tested this proposition using survey and experimental methods. These studies also considered social connectedness as a mediator of the link between nostalgia and meaning. Moreover, if nostalgia is an important source of meaning, then it follows that threats to meaning will heighten nostalgia as a way to counter this threat. If, in turn, nostalgia serves as an effective defense against threats to meaning, then it should also attenuate the well-documented hostile responses to such meaning threats (Becker, 1971; Florian & Mikulincer, 2004; Frankl, 1959). We tested these predictions in Studies 3 and 4. Finally, we hypothesized that, if nostalgia is a meaning-providing resource, then it should also mitigate the deleterious psychological consequences of meaning deficits. Accordingly, in Studies 5 and 6, we examined whether nostalgia bolsters psychological well-being, and attenuates the adverse effects of stressful experiences, for individuals who lack a sense of meaning in life.

### Preliminary Investigation

Prior to conducting our primary studies, we first sought to establish a basic relation between nostalgia and meaning. To this end, we conducted a survey testing for a correlation between nostalgia and meaning. Forty-two (17 female) North Dakota State University (NDSU) undergraduates completed three validated scales. The first one was the seven-item Southampton Nostalgia Scale (SNS), as a measure of nostalgia proneness (SNS— $\alpha = .86$ ; Routledge et al., 2008; sample item: “How often do you experience nostalgia?”). The second scale was the four-item Purpose in Life (PIL— $\alpha = .73$ ; McGregor & Little, 1998; sample item: “My personal existence is purposeful and meaningful”). Finally, the third scale was the five-item Presence of Meaning in Life (Presence— $\alpha = .90$ ; Steger, Frazier, Oishi, & Kaler, 2006; sample item: “I have a good sense of what makes my life meaningful”). The latter two scales were indices of personal meaning in life. SNS ratings were positively correlated with both PIL,  $r(42) = .35, p < .05$ , and Presence ratings,  $r(42) = .31, p < .05$ . The PIL and

Presence scales were also significantly correlated,  $r(42) = .44, p < .01$ , and there were no gender differences on any of these measures ( $ps > .15$ ). In summary, nostalgia proneness was positively related to personal meaning in life. This preliminary investigation sets the stage for an in-depth examination of nostalgia as an existential resource. We started out by testing, in Studies 1 and 2, whether the link between nostalgia and meaning in life is mediated by one’s sense of social connectedness.

### Study 1

Having demonstrated with established measures that high levels of nostalgia are associated with high levels of personal meaning, we turned to a naturalistic approach of tapping into nostalgia in our first primary study. Burgeoning research on music-evoked emotions shows that bringing to mind or listening to songs from one’s past can evoke strong feelings of nostalgia (Barrett et al., 2010; Janata, Tomic, & Rakowski, 2007; Juslin, Liljestrom, Vastfjall, Barradas, & Silva, 2008; Zentner, Grandjean, & Scherer, 2008). In Study 1, we capitalized on this evocative property of music to address two key questions. First, does music-evoked nostalgia enhance the sense that life is meaningful? Second, is the link between music-evoked nostalgia and the sense of meaning in life mediated by social connectedness? To investigate these issues, we conducted an online survey with a diverse sample of the Dutch general public. Participants reflected on their favorite songs and listened to popular songs. For each song, participants then rated how “nostalgic” the song made them feel. Next, we assessed social connectedness by asking participants how “loved” the song made them feel. Finally, participants rated the extent to which the song made them feel that “life is worth living” (as an indicator of felt meaning). We hypothesized a positive relationship between the intensity of music-evoked nostalgia and perceptions that life is worth living. We also hypothesized that this relationship would be mediated by how loved the song made participants feel.

### Method

**Participants.** Three hundred fifty-seven volunteers (160 women) completed study materials online ( $M_{\text{age}} = 42.64, SD = 11.44$ ; range = 10–71).<sup>1</sup> Materials were presented on a website hosted by Tilburg University. Participants completed the study after having visited the website for “Top 2000,” a popular Dutch radio and television program that is aired annually around Christmas. The “Top 2000” website displayed an invitation to participate in research, and interested visitors could navigate to the Tilburg University website with study materials. Data collection commenced in December 2008 and was terminated in January 2009.

<sup>1</sup> The sample was heterogeneous with respect to age, educational background, and relationship status. For descriptive purposes, we divided age into six categories. Four percent of participants were aged 10–19 years; 13% were aged 20–29 years; 13% were aged 30–39 years; 39% were aged 40–49 years; 27% were aged 50–59 years; and 4% were aged 60 and over. Assessment of participants’ relationship status showed that 47% were married, 11% were cohabiting, 8% were dating, 21% were single, 10% were divorced, and 3% were widowed (a further 1% selected the “other” option). Ninety-eight percent of participants identified the Netherlands as their country of birth.

**Procedure and materials.** After reading a consent form and completing demographic information, participants completed two tasks in a fixed order. For the first task, participants were instructed to bring to mind two of their favorite songs. For each song, participants reported the name of the song and performing artists, and rated on a 5-point scale (1 = *not at all applicable to me*, 5 = *highly applicable to me*) how “nostalgic” the song made them feel, how “loved” the song made them feel, and how much the song made them feel that “life is worth living.” For the second task, participants listened to two popular Dutch songs using a media player in their Internet browser and then completed the same set of ratings (“nostalgic,” “loved,” and “life is worth living”; 1 = *not at all applicable to me*, 5 = *highly applicable to me*).

## Results and Discussion

We present relevant descriptive statistics and correlations in Table 1. For both songs within each task, we found that (a) music-evoked nostalgia was significantly correlated with perceived meaning in life (“life is worth living”), (b) music-evoked nostalgia was significantly correlated with social connectedness (“loved”), and (c) social connectedness was significantly correlated with perceived meaning in life.

**Nostalgia and meaning in life.** We examined the generality of the association between nostalgia and meaning in life across age and gender. We used PROC MIXED in SAS 9.1 to conduct a hierarchical linear modeling (HLM) analysis in which songs were treated as units of analysis nested within participants (four songs per participant). The HLM analysis modeled meaning in life as a function of two Level 1 predictors and two Level 2 predictors. The Level 1 predictors were nostalgia and task (favorite songs vs. listening). The Level 2 predictors were age and gender. We tested a full-factorial model (main effects and interactions for all predictors). Nostalgia, a Level 1 predictor, was centered within participants, and age, a Level 2 predictor, was grand mean centered (Singer, 1998). We included a random intercept to represent differences in the mean level of perceived meaning between participants.

There were three significant fixed effects. Most important, there was a significant association between nostalgia and meaning ( $B = 0.33$ ,  $SE = 0.03$ ),  $t(1059) = 12.11$ ,  $p < .0001$ . The more nostalgic participants felt when bringing to mind or listening to a song, the more they rated this song as providing meaning in life. There was also a significant effect for task. Perhaps not surprisingly, bringing to mind favorite songs gave rise to greater perceived meaning than did listening to preselected songs ( $B = 0.39$ ,  $SE = 0.03$ ),  $t(1059) = 14.51$ ,  $p < .0001$ . Finally, there was a significant Nostalgia  $\times$  Task interaction ( $B = 0.20$ ,  $SE = 0.03$ ),  $t(1059) = 6.22$ ,  $p < .0001$ . The association between nostalgia and meaning was strongest in the listening task (see Table 1), but the weaker association in the favorite-songs task was also significant ( $B = 0.13$ ,  $SE = 0.04$ ),  $t(1059) = 2.95$ ,  $p < .003$ . The interaction may be due to restriction of range for nostalgia and meaning ratings in the favorite-songs task, relative to the listening task (see Table 1, standard deviations). Crucially, the association between nostalgia and meaning generalized across tasks and did not vary significantly as a function of gender or age (or the factorial combination of these variables), thus underscoring its generality.

**Nostalgia and social connectedness.** We conducted an identical HLM analysis with social connectedness as the dependent variable. There were two significant fixed effects. There was a significant association between nostalgia and social connectedness ( $B = 0.28$ ,  $SE = 0.03$ ),  $t(1059) = 11.23$ ,  $p < .0001$ . The more nostalgic participants felt when bringing to mind or listening to a song, the more they rated this song as evoking social connectedness. There was also a significant effect for task. Bringing to mind favorite songs gave rise to stronger social connectedness than did listening to preselected songs ( $B = 0.29$ ,  $SE = 0.02$ ),  $t(1059) = 11.50$ ,  $p < .0001$ . The association between nostalgia and social connectedness did not vary significantly as a function of task, gender, or age (or any factorial combination of these variables). Thus, results for social connectedness tracked closely the findings for meaning. A logical next step is therefore to examine whether the association between nostalgia and meaning was mediated by social connectedness.<sup>2</sup>

**Mediational analyses.** To examine mediation, we repeated the HLM analysis with meaning as the dependent variable and added social connectedness as a Level 1 covariate. With social connectedness in the model, the association between nostalgia and meaning in life was reduced but remained significant ( $B = 0.17$ ,  $SE = 0.02$ ),  $t(1058) = 6.97$ ,  $p < .01$ . The association between social connectedness and meaning in life was significant ( $B = 0.56$ ,  $SE = 0.03$ ),  $t(1058) = 19.36$ ,  $p < .0001$ . A Sobel test showed that there was a significant indirect effect of nostalgia on meaning via social connectedness ( $z = 9.71$ ,  $p < .0001$ ) (by using the term indirect effect, we are adopting the parlance of intervening variable models and do not imply causation).<sup>3</sup>

**Summary.** Social connectedness mediated the relation between music-evoked nostalgia and perceived meaning in life. These results were observed in a highly diverse sample, and the broad age range allowed for a test of the generality of the exist-

<sup>2</sup> Before evaluating the tests of fixed effects, we examined the variance component representing differences in the mean level of the dependent variable between participants (denoted as  $\tau_{00}$ ). When perceived meaning in life (“life is worth living”) was the dependent variable, this variance component was significant ( $\tau_{00} = .48$ ,  $SE = .05$ ,  $z = 9.03$ ,  $p < .001$ ). The total variance in perceived meaning ratings that occurred between participants (as estimated by the intraclass correlation  $\rho$ ) was  $\rho = .36$ . When social connectedness (“loved”) was the dependent variable, the variance component for the intercept was also significant ( $\tau_{00} = .51$ ,  $SE = .05$ ,  $z = 9.68$ ,  $p < .001$ ). The total variance in social connectedness ratings that occurred between participants was  $\rho = .41$ . These results indicate that there was a fair degree of clustering of perceived meaning and social connectedness ratings within participants and, hence, underscore the appropriateness of conducting an HLM (as opposed to an ordinary least squares) analysis.

<sup>3</sup> We also examined models with the same fixed effects but additional random effects. In addition to a random intercept, these models also included random slopes. Including random slopes did not affect any of the key results. To further corroborate our findings, we implemented a procedure developed by Bauer, Preacher, and Gil (2006) for evaluating indirect effects (denoted as  $ab$ ) in multilevel models when the independent variable (i.e., nostalgia), mediator (i.e., social connectedness), and dependent variable (i.e., meaning in life) are measured at Level 1 and all effects are random. We found that the indirect effect of nostalgia on meaning via social connectedness was significant ( $ab = .25$ ,  $SE = .02$ ,  $z = 12.03$ ,  $p < .001$ , 95% CI = .21, .29).



Table 1  
Means, Standard Deviations, and Intercorrelations for Ratings of Music-Evoked Nostalgia (“Nostalgic”), Meaning in Life (“Life Is Worth Living”), and Social Connectedness (“Loved”) in Study 1

Variable	Song 1		Song 2		Correlation with		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	1	2	3
Task 1: Favorite songs							
1. “Nostalgic”	3.43	1.17	4.01	1.00	—	.29*	.27*
2. “Life is worth living”	3.66	1.11	3.79	1.10	.20*	—	.50*
3. “Loved”	2.86	1.11	3.15	1.14	.31*	.51*	—
Task 2: Listening							
1. “Nostalgic”	2.81	1.30	2.96	1.35	—	.55*	.42*
2. “Life is worth living”	2.53	1.28	2.77	1.34	.54*	—	.75*
3. “Loved”	2.02	1.04	2.33	1.23	.43*	.71*	—

Note. Within each task, correlations for Song 1 are listed below the diagonal and correlations for Song 2 are listed above the diagonal.

\*  $p < .0001$ .

tential function of nostalgia.<sup>4</sup> Neither age nor gender qualified the Study 1 findings.

## Study 2

We designed Study 2 to test the causal effect of nostalgia on perceived meaning in life and to corroborate the mediating role of social connectedness. To this end, we introduced a novel nostalgia induction that capitalizes on music’s capacity to evoke nostalgia (Barrett et al., 2010; Janata et al., 2007; Juslin et al., 2008). Specifically, we induced nostalgia by presenting participants with lyrics to songs that they had previously identified as being nostalgic (compared with control lyrics). We hypothesized that exposure to nostalgic song lyrics (compared with control lyrics) would heighten a sense of personal meaning in life. To examine the mediating role of social connectedness, we administered the Social Provisions Scale (SPS; Cutrona & Russell, 1987; Russell, Cutrona, Rose, & Yurko, 1984). The SPS assesses the functions or “provisions” that may be obtained from social relationships (Weiss, 1974). In light of Cutrona and Russell’s (1987) findings that scale responses could be accounted for by a general social connectedness factor, we focused our mediation analyses on the full SPS scale rather than on the highly correlated scale facets (Cohen, Cohen, West, & Aiken, 2003).

## Method

**Participants, design, and procedure.** Fifty-three (44 female) University of Southampton undergraduates participated for course credit. They were randomly assigned to the nostalgia or control condition. Participants completed all materials in a paper-and-pencil packet in the order that follows, and were debriefed.

**Nostalgia manipulation.** The study involved an initial session and an experimental session that were separated by approximately 1 week. In the initial session, participants were given a dictionary definition of nostalgia (“A sentimental longing or wistful affection for the past”; *The New Oxford Dictionary of English*, 1998) and then listed the titles and performing artists of three songs that made them feel nostalgic. Prior to the experimental session, participants were randomly allocated to conditions. For

participants in the nostalgia condition, the lyrics of a song they listed as personally nostalgic were retrieved. Participants in the control condition were yoked to a participant in the nostalgia condition and designated to receive the same lyrics as this person (it was ascertained that the relevant song was not one that the control participant also considered nostalgic). In this way, the same set of lyrics in the nostalgia and control conditions were used, and thus the content of the lyrics in both conditions were held constant.

During the experimental session, participants first read the prepared lyrics. Given the novelty of this nostalgia induction, a validated three-item assessment of state nostalgia that served as a manipulation check (e.g., “I feel nostalgic at the moment”; Wildschut et al., 2006, 2010; Zhou et al., 2008) was then administered. Items were rated on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*) and formed a reliable index ( $\alpha = .98$ ;  $M = 3.96$ ,  $SD = 1.56$ ).

**The SPS.** Subsequently, participants completed the SPS ( $\alpha = .90$ ;  $M = 4.80$ ,  $SD = 0.70$ ). It includes 24 items assessing the following six provisions of social relationships: Guidance (e.g., “There is someone I could talk to about important decisions in my life”); Reliable Alliance (e.g., “There are people I can count on in an emergency”); Reassurance of Worth (e.g., “There are people who admire my talents and abilities”); Nurturance (e.g., “There are people who depend on me for help”); Attachment (e.g., “I have close relationships that provide me with a sense of security and emotional well-being”); and Social Integration (e.g., “I feel part of a group of people who share my attitudes and beliefs”). Half of the items were phrased such that stronger endorsement indicated higher perceived social support, whereas the other items were phrased in the opposite direction. All items were rated on a 6-point scale (1 = *strongly disagree*, 6 = *strongly agree*).

**Meaning in life.** Finally, perceptions of meaning in life were assessed with the five-item Presence scale used in the preliminary investigation (Steger et al., 2006). Specifically, participants used a

<sup>4</sup> We also conducted the analyses removing the youngest age group (10–19), and the results were virtually unchanged.

7-point scale (1 = *absolutely untrue*, 7 = *absolutely true*) to rate their agreement with statements such as “I have a good sense of what makes my life meaningful.” The scale is correlated with other measures of personal meaning and purpose as well as general measures of well-being (Steger et al., 2006). The scale had adequate reliability ( $\alpha = .76$ ;  $M = 3.28$ ,  $SD = 0.93$ ).

## Results and Discussion

**Effect of nostalgia on meaning.** A one-way analysis of variance (ANOVA) demonstrated that the nostalgia manipulation was successful. Participants who read nostalgic lyrics ( $M = 4.82$ ,  $SD = 0.85$ ) felt significantly more nostalgic than participants who read control lyrics ( $M = 3.12$ ,  $SD = 1.64$ ),  $F(1, 51) = 22.14$ ,  $p < .001$ . Most important, a one-way ANOVA also demonstrated that participants who read nostalgic lyrics ( $M = 3.61$ ,  $SD = 0.90$ ) indicated significantly higher levels of meaning than participants who read control lyrics ( $M = 2.96$ ,  $SD = 0.86$ ),  $F(1, 51) = 7.15$ ,  $p = .01$ . To further test whether the effect of the nostalgia manipulation on meaning was indeed driven by state nostalgia, we treated the manipulation check as a mediator. Specifically, we conducted a regression analysis with the nostalgia manipulation (dummy coded) and the manipulation check (centered) entered simultaneously as predictors of meaning. When controlling for state nostalgia (the manipulation check), the previously observed effect of the nostalgia manipulation on meaning became nonsignificant ( $B = .23$ ,  $SE = .27$ ),  $t(50) = 0.85$ ,  $p = .40$ . However, the association of state nostalgia with meaning, when controlling for the manipulation, was significant ( $B = .25$ ,  $SE = .09$ ),  $t(50) = 2.78$ ,  $p < .01$ . A Sobel test further indicated that state nostalgia mediated the effect of the nostalgia manipulation on meaning ( $z = 2.39$ ,  $p < .05$ ). In all, the nostalgia induction increased meaning by elevating feelings of nostalgia.

**Mediation by social connectedness.** A one-way ANOVA of the SPS revealed that participants who read nostalgic lyrics ( $M = 5.02$ ,  $SD = 0.66$ ) reported stronger social connectedness than participants who read control lyrics ( $M = 4.60$ ,  $SD = 0.69$ ),  $F(1, 51) = 5.13$ ,  $p < .05$ . When controlling for social connectedness, the previously observed effect of the nostalgia manipulation on meaning became nonsignificant ( $B = .33$ ,  $SE = .21$ ),  $t(50) = 1.57$ ,  $p < .13$ , and the association between social connectedness and meaning was significant ( $B = .77$ ,  $SE = .15$ ),  $t(50) = 5.14$ ,  $p < .001$  (Sobel test:  $z = 2.10$ ,  $p < .05$ ).

**Summary.** Reading nostalgic (compared with control) lyrics strengthened social connectedness and a concomitant sense of personal meaning in life. These results thus further corroborate the postulated mediating role of social connectedness: Nostalgia bolsters social connectedness, and this strengthened sense of social connectedness is at least partially responsible for nostalgia’s capacity to make life feel meaningful.

### Study 3

Studies 1 and 2 provided insight into the link between nostalgia and meaning by corroborating the postulated mediating role of social connectedness. In Studies 3 and 4, we broaden our analysis by considering the extent to which nostalgia helps individuals navigate situations that undermine meaning. Study 3 started with a simple question: When the perception that their existence is mean-

ingful is threatened, do people become more nostalgic? We manipulated meaning threat by having participants read either an existential essay asserting that life has no meaning (meaning-threat essay) or a control essay concerning the limitations of computers (no-threat essay). Subsequently, we measured state nostalgia. We hypothesized that participants in the meaning-threat (compared with no-threat) condition would experience heightened levels of nostalgia.

## Method

**Participants, design, and procedure.** Fifty-four (14 female) undergraduates from NDSU ( $N = 25$ ) and the University of Southampton ( $N = 29$ ) participated for course credit. They were randomly assigned to the meaning-threat or control condition. Participants were informed that the study involved an examination of the relation between personality and attitudes about life, completed all materials in a paper-and-pencil packet in the order that follows, and were debriefed.

**Meaning threat manipulation.** After completing several filler measures to bolster the cover story, participants were exposed to the meaning-threat manipulation. Both the meaning-threat and no-threat essay were largely, but not exclusively, drawn from J. L. Park (2001). Participants were instructed to “read the following extract from an essay written by the philosopher Dr. James Park of Oxford University.” The inclusion of the doctorate and highly regarded British university was intended to project a degree of credibility, although Dr. Park is not actually at Oxford University. The meaning-threat essay made the argument that life has no real meaning, whereas the no-threat essay concerned the limitations of computers. Specifically, the meaning-threat essay contained passages such as,

I first glimpsed the meaninglessness of life in my late teens, when I began to look deeply into my future, trying to decide what to do with my life. It was a time of deep searching and questioning. These questions have remained until today; let me share them with you.

There are approximately 7 billion people living on this planet. So take a moment to ponder the following question: In the grand scheme of things, how significant are you? The Earth is 5 billion years old and the average human life span across the globe is 68 years. These statistics serve to emphasize how our contribution to the world is paltry, pathetic and pointless. What is 68 years of one person’s rat-race compared to 5 billion years of history? We are no more significant than any other form of life in the universe.

The no-threat essay contained passages such as,

Computers are able to recognize, remember, store, and manipulate many forms of abstract symbols, including every human language and the special mathematical languages of the sciences. In fact, the words you are looking at right now were put through a machine which stored them electronically and which allowed me, the author, to manipulate them several times before they were finally printed out by another machine.

But even though all these words went through an “electronic memory” which kept every key-stroke for as long as I wanted, the computer never understood a word of this text. A computer does not comprehend what is stored in its “memory” any more than a book in the library understands what it contains. Nevertheless computers can become quite clever with language.

The essays were of similar length. Also, in a between-subjects pretest ( $N = 34$ ), the essays were perceived as virtually identical in terms of how engaging, interesting, or original they were ( $ps > .42, .56, \text{ and } .97$ , respectively). However, when asked to respond to how the essay made them feel, participants found that the meaning-threat essay ( $M = 3.84, SD = 1.98$ ), relative to the no-threat essay ( $M = 1.60, SD = 0.91$ ), “cast doubt on the belief that life is full of meaning,”  $F(1, 32) = 16.42, p < .001$ . In summary, these pretest data suggest that the meaning-threat essay served to undermine meaning but was not regarded as more interesting, engaging, or original than the no-threat essay.

**State nostalgia.** The same three-item assessment of state nostalgia as in Study 2 (e.g., “I feel nostalgic at the moment”; Wildschut et al., 2006, 2010; Zhou et al., 2008) was used. Items were rated on a 6-point scale (1 = *strongly disagree*, 6 = *strongly agree*) and formed a reliable index ( $\alpha = .96; M = 3.11, SD = 1.39$ ).

## Results and Discussion

There were no effects involving gender or sample (United States vs. United Kingdom;  $ps > .50$ ). As hypothesized, a one-way ANOVA revealed that participants in the meaning-threat condition ( $M = 3.44, SD = 1.49$ ) were more nostalgic than participants in the no-threat condition ( $M = 2.69, SD = 1.15$ ),  $F(1, 52) = 4.14, p < .05$ . This finding complements those of the first two studies and further suggests that nostalgia is a source of meaning. When meaning is threatened, people turn to nostalgia. But does nostalgia, in turn, help individuals navigate situations that threaten meaning? We addressed this question in Study 4 by examining whether nostalgia can attenuate people’s well-documented defensive responses to information that threatens their sense of meaning in life (Becker, 1971; Florian & Mikulincer, 2004; Frankl, 1959).

### Study 4

In their classic book, *The Social Construction of Reality*, Berger and Luckman (1967) argued that, when people encounter others who threaten their meaningful view of reality, they must diffuse that threat. These authors outlined a variety of trajectories along which threat-diffusing responses can proceed, including a tendency to derogate those views that undermine one’s own beliefs. A wide range of findings fit this analysis. Indeed, research derived from TMT suggests that one way in which people maintain meaning is by dismissing or disparaging those who offer perspectives that differ from their own meaning-providing beliefs (Greenberg et al., 1990). Research from this and other traditions also supports the proposition that, if a given resource protects people from a particular threat, then bolstering that resource will attenuate defensiveness toward that psychological threat (Green, Sedikides, & Gregg, 2008; Harmon-Jones et al., 1997; Kumashiro & Sedikides, 2005; Sherman & Cohen, 2006).

Accordingly, we hypothesized that, if nostalgia fortifies meaning, then inducing nostalgia should reduce the need to react defensively to information that challenges perceptions of meaning. We examined this hypothesis in Study 4. We manipulated nostalgia and then exposed participants to either the meaning-threat or no-threat essay used in Study 3. Participants then evaluated the essay and its author. We predicted that participants would have

more negative reactions to the meaning-threat essay and its author than to the no-threat essay and its author but that this defensive reaction would be attenuated by nostalgia.

## Method

**Participants, design, and procedure.** Ninety-seven (87 female) University of Southampton undergraduates participated for course credit. They were randomly assigned to the conditions of a 2 (nostalgic vs. ordinary event reflection)  $\times$  2 (meaning-threat vs. no-threat essay) between-subjects design. Participants were informed that the study was concerned with the relation between personality and various attitudes, completed all materials in a paper-and-pencil packet in the order that follows, and were debriefed.

**Nostalgia manipulation.** Instructions in the nostalgia condition were similar to those used in previous research (Routledge et al., 2008; Wildschut et al., 2006, 2010; Zhou et al., 2008). Participants in the *nostalgia* condition read the following:

According to the *New Oxford Dictionary of English*, ‘nostalgia’ is defined as a ‘sentimental longing for the past.’ Please bring to mind a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic. Please write down four keywords relevant to this nostalgic experience (i.e., words that sum up the gist of the experience).

Participants in the control condition were instructed to bring to mind an ordinary past event and to type four keywords relevant to this ordinary event.

**Meaning threat manipulation.** Following the nostalgia manipulation, participants were exposed to the same meaning-threat manipulation used in Study 3. That is, participants were randomly assigned to read either the meaning-threat or the no-threat essay.

**Essay evaluation.** Participants’ reactions to the assigned essay and its author were assessed with six items (1 = *strongly disagree*, 7 = *strongly agree*). Items 1–4 pertained to evaluation of the author (e.g., “The author is a reliable source,” “The author makes a strong case”). Items 5 and 6 pertained to evaluation of the essay (e.g., “The essay is convincing in conveying its point”). The six items formed a reliable index ( $\alpha = .75$ ).

The essay and evaluation were based on terror management research, whereby participants read comparable essays challenging their perception of a meaningful worldview and respond using similar questions regarding the author and essay (Greenberg et al., 1990). The essay evaluation serves as an indication of participants’ level of defensiveness. Higher scores typify more favorable attitudes toward the author and essay, and thus a less defensive response.

## Results and Discussion

To test the primary hypothesis, we carried out a Nostalgia  $\times$  Meaning Threat ANOVA. There was a main effect of meaning threat, such that participants liked the meaning-threat essay less ( $M = 4.43, SD = 0.86$ ) than the no-threat essay ( $M = 5.14, SD = 0.67$ ),  $F(1, 93) = 23.07, p < .001$ . More important, this main effect was qualified by the predicted Nostalgia  $\times$  Meaning Threat interaction,  $F(1, 93) = 7.68, p < .01$  (see Figure 1).

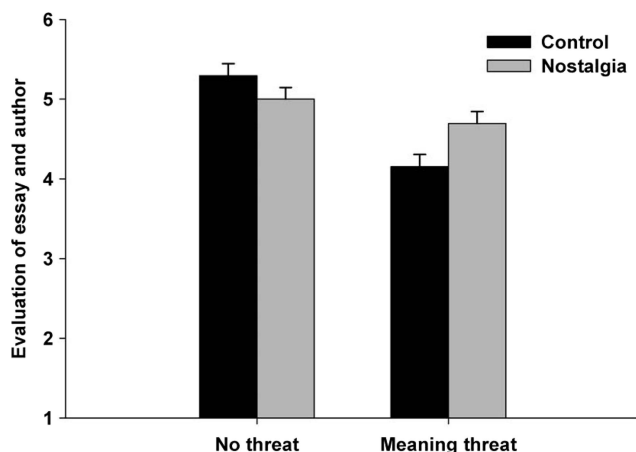


Figure 1. Mean evaluation of essay and author as a function of meaning threat and nostalgia in Study 4. Higher values reflect more positive evaluation of the essay and author. Error bars represent standard errors.

To explore this interaction and test the hypothesis that inducing nostalgia will attenuate defensiveness against a meaning threat, we conducted pairwise comparisons. Within the no-threat essay conditions, participants in the nostalgic event condition ( $M = 5.00$ ,  $SD = 0.71$ ) and participants in the ordinary event condition ( $M = 5.29$ ,  $SD = 0.60$ ) did not significantly differ in their evaluations,  $F(1, 93) = 1.93$ ,  $p = .17$ . However, when exposed to a meaning threat, participants in the nostalgia condition ( $M = 4.69$ ,  $SD = 0.63$ ) responded less disparagingly than participants in the ordinary event condition ( $M = 4.15$ ,  $SD = 0.98$ ),  $F(1, 93) = 6.31$ ,  $p < .01$ . Viewed differently, within the ordinary event condition (when nostalgia was not induced), participants evaluated the meaning-threat essay less favorably ( $M = 4.15$ ,  $SD = 0.98$ ) than the no-threat essay ( $M = 5.29$ ,  $SD = 0.60$ ),  $F(1, 93) = 27.84$ ,  $p < .001$ . However, as predicted, nostalgia attenuated this effect. Within the nostalgic event condition, the difference between attitudes toward the meaning-threat essay ( $M = 4.69$ ,  $SD = 0.63$ ) and no-threat essay ( $M = 5.00$ ,  $SD = 0.71$ ) was not statistically significant,  $F(1, 93) = 2.13$ ,  $p = .15$ .

The results support the hypothesis that nostalgia counters threats to meaning, as having the opportunity to be nostalgic reduced defensive responses to an essay that challenged participants' perceived meaning in life. As other authors have suggested (Baumeister, 1991; Becker, 1971; Bruner, 1990; Solomon et al., 1991), life is full of experiences that potentially call into question its purpose and meaning. Having the wherewithal to cope adaptively with such challenges promotes both positive social interactions with those who may see the world differently and psychological well-being (an issue we address in the final two studies). Nostalgia may thus be one way in which people use the past to face existential challenges in the present.

### Study 5

Studies 3 and 4 showed that meaning threats increase nostalgia and that nostalgia, in turn, attenuates defensive responses to meaning threats. These findings are consistent with the idea that nostalgia helps individuals navigate situations that undermine mean-

ing. In Studies 5 and 6, we built on these findings by examining whether nostalgia also buffers the deleterious consequences that are typically associated with dispositional meaning deficits. In Study 5, we focused on eudaemonic well-being, which represents a critical component of well-being (Ryan & Deci, 2001; Ryff, 1989; Waterman, 1993). Rather than highlighting hedonic elements (i.e., pleasure and pain), it is concerned with meaning, purpose, and becoming a fully functional person. It reflects a level of heightened energy for living (i.e., feeling alive and vital). Given that eudaemonic well-being is relevant to a meaningful and energized existence, it is a dimension of well-being that may be particularly at risk when people lack a sense of meaning. Thus, in the present study, we used a measure of subjective vitality (Ryan & Frederick, 1997) that Ryan and Deci (2001) considered an indicator of eudaemonic well-being. We measured meaning in life, manipulated nostalgia, and assessed vitality. We hypothesized that, for individuals with existing meaning deficits, nostalgia would increase subjective vitality.

### Method

**Participants, design, and procedure.** Forty-three (22 female) undergraduates from NDSU participated in exchange for course credit. The design included two independent variables: Personal meaning in life was measured and nostalgia was manipulated. Participants were informed that the study related to personality and life attitudes, completed all materials on a computer in partitioned cubicles in the following order, and were debriefed.

**Meaning.** Meaning in life was measured with the PIL scale (McGregor & Little, 1998) used in the Preliminary Investigation section. Specifically, participants responded to four items that assessed personal meaning in life (e.g., "My personal existence is purposeful and meaningful"; 1 = *disagree strongly*, 5 = *agree strongly*). The scale had good reliability ( $\alpha = .87$ ;  $M = 3.98$ ,  $SD = 0.73$ ).

**Nostalgia manipulation.** The same nostalgia manipulation was used as in Study 4. That is, participants were randomly assigned to reflect on either a nostalgic or an ordinary event from their life (Routledge et al., 2008; Wildschut et al., 2006, 2010; Zhou et al., 2008).

**Vitality.** Finally, participants completed the State Vitality scale (Ryan & Frederick, 1997). The scale asks respondents to rate their agreement (1 = *not true*, 9 = *very true*) with seven items reflecting aliveness and energy about living (e.g., "At this moment, I feel alive and vital," "I am looking forward to each new day"). The scale had good reliability ( $\alpha = .91$ ;  $M = 4.29$ ,  $SD = 1.40$ ). Vitality is a marker of eudaemonic well-being (Ryan & Deci, 2001). Ryan and Frederick (1997) reported that vitality scores are positively correlated with the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) and the RAND mental health subscale for well-being (Brook et al., 1979), and are negatively correlated with the Taylor Manifest Anxiety scale (Taylor, 1953) and the RAND mental health subscales for anxiety and depression (Brook et al., 1979).

### Results and Discussion

To test the hypothesis, we conducted a hierarchical regression analysis in which we entered meaning in life (centered) and the



nostalgia manipulation (dummy coded) in the first step and the interaction term in the second step (Aiken & West, 1991) as predictors of vitality. In the first step, there was a main effect of meaning such that higher meaning scores were associated with higher scores on vitality ( $B = 1.10$ ,  $SE = .26$ ),  $t(39) = 4.29$ ,  $p < .001$ . This main effect was qualified, however, by the predicted interaction in the second step ( $B = 1.22$ ,  $SE = .48$ ),  $t(38) = -2.52$ ,  $p < .05$  (see Figure 2).

To partition this interaction, we conducted simple effects tests at one standard deviation above and below the centered mean of meaning in life. For low-meaning participants ( $-1 SD$ ), nostalgia, relative to the control condition, increased vitality ( $B = 1.24$ ,  $SE = .56$ ),  $t(38) = 2.24$ ,  $p < .05$ . No such effect was found for high-meaning participants ( $+1 SD$ ) ( $B = -.71$ ,  $SE = .48$ ),  $t(38) = -1.46$ ,  $p = .15$ . Looked at differently, whereas there was a strong relation between meaning and vitality within the control condition, such that lower meaning predicted lower vitality ( $B = 1.75$ ,  $SE = .35$ ),  $t(38) = 4.96$ ,  $p < .001$ , this relation was much weaker (and nonsignificant) within the nostalgia condition ( $B = .53$ ,  $SE = .33$ ),  $t(38) = 1.61$ ,  $p = .15$ . In all, the nostalgia treatment successfully disrupted the link between low meaning and low well-being.

Study 5 advanced the current examination of nostalgia as an existential resource by demonstrating that experimentally inducing nostalgia can bolster eudaemonic well-being among those who lack a sense of meaning in life. In this way, nostalgia may offer a viable means to infuse meaning into life in the service of psychological health for those with meaning deficits. Such a finding offers promise for clinical work using nostalgia as an intervention for meaning-deficit-related disorders (e.g., depression). It is important to note that the present research did not use a clinical sample, and so we must be cautious not to overstate the utility of nostalgia for promoting mental health. Still, this is the first controlled laboratory study of a nostalgia intervention to combat the adverse symptoms of meaning deficits. As such, this study takes a critical step toward an empirically informed program of research focused on nostalgia and mental health.

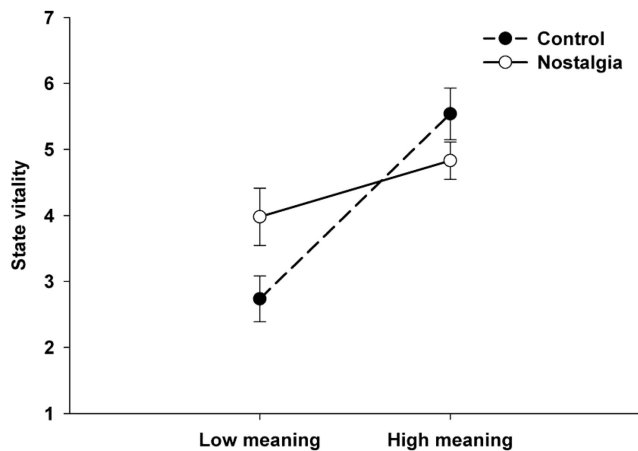


Figure 2. State vitality as a function of meaning in life and nostalgia in Study 5. Plotted values are predicted means conditioned at one standard deviation above (high meaning) and below (low meaning) the average for meaning in life. Higher values reflect higher state vitality. Error bars represent standard errors.

## Study 6

Study 5 offers promise that nostalgia has potential as an intervention to promote mental health and well-being. To consider this possibility further, in our final study, we sought to conceptually replicate and extend these findings. As previously noted, meaning in life helps people cope with aversive life experiences and thus promotes psychological health in the face of distressing life circumstances. Therefore, people with deficits in meaning may be particularly vulnerable to experiencing stress in challenging situations (Park & Folkman, 1997). Whereas Study 5 provided evidence that nostalgia promotes well-being for those who lack meaning, it did not provide the more crucial test of whether or not nostalgia could be implemented to mitigate the effects of a distressing experience for these individuals. In Study 6, we tested this possibility using an established stress protocol to assess the subjective experience of situationally induced stress (Dickerson & Kemeny, 2004; Kirschbaum, Pirke, & Hellhammer, 1993). We hypothesized that low-meaning participants would experience greater subjective stress than high-meaning participants following a stressful task. Critically, we predicted that nostalgia would moderate this effect and reduce feelings of stress for low-meaning participants.

## Method

**Participants and design.** Thirty-five (20 female) University of Southampton undergraduates participated in exchange for course credit. The design included two independent variables: Personal meaning in life was measured and nostalgia was manipulated. Meaning in life was assessed with a single item: “My life has meaning” (1 = *strongly disagree*, 7 = *strongly agree*;  $M = 5.90$ ,  $SD = 1.16$ ). The item was embedded in a set of additional items that were part of a broader study of stress. Other items were also included as fillers to disguise the study’s purpose. The same nostalgia manipulation was used as in Studies 4 and 5. That is, participants were randomly assigned to reflect on a nostalgic or an ordinary event from their life.

**Procedure and materials.** Participants completed the Trier Social Stress Test (TSST), a laboratory protocol for inducing psychosocial stress (Kirschbaum et al., 1993; Kudielka, Hellhammer, & Kirschbaum, 2007). It consists of a public speaking and mental arithmetic task, and reliably produces subjective psychological stress responses (Schlotz et al., 2008). Subjective stress was assessed at three time points separated by 30-min intervals: ~15 min before the start of the TSST (baseline), immediately after the TSST (~30 min after baseline), and ~30 min after the TSST. Participants rated on a 4-point scale (0 = *not at all*, 3 = *very much*) the extent to which they felt “jittery,” “fearful,” and “ashamed.” The three items formed a reliable index of subjective stress ( $\alpha = .70$ ). A factor analysis of existing subjective-stress scales showed that this brief measure provides adequate coverage of the subjective-stress concept (Schlotz & Kumsta, 2011).

Upon arrival at the laboratory, participants completed a set of questionnaires comprising the item that measured perceived meaning in life (embedded in a set of filler items) and the baseline assessment of subjective stress. Next, participants were escorted to an adjacent laboratory, where they first received instructions relevant to the nostalgia manipulation and were then introduced to the

TSST. Specifically, following the nostalgia manipulation, two research assistants (1 female, 1 male) dressed in laboratory coats entered the laboratory and were seated at a desk, facing the participants. The experimenter told participants that they were to perform the role of a job candidate who was invited for an interview with a selection panel (i.e., the research assistants). Participants were instructed that, after a 3-min preparation period, they should introduce themselves to the panel in a 5-min presentation and convince the panel of their suitability for the vacant position of tour guide. Participants were made aware that their performance would be recorded by video camera.

Following these instructions, participants were supplied with paper and pencil and given 3 min to prepare their presentation. They were not allowed to use their notes during the presentation. After 3 min, one of the panel members invited the participants to deliver their presentation. When participants finished their presentation in less than 5 min, a panel member remarked: "You still have some time left. Please continue." If, subsequently, participants still finished in less than 5 min, the panel members remained silent for 20 s and then asked prepared questions until 5 min had elapsed. Next, a panel member instructed participants to subtract serially the number 17 from 2,023 as fast and as accurately as possible. Following each mistake, a panel member instructed participants to restart the task at 2,023. This mental arithmetic task lasted 5 min. Immediately after this final part of the TSST, participants completed a second assessment of subjective stress. They were then escorted to an adjacent room. After resting for 30 min, during which period participants were allowed to read or study, they completed a further assessment of subjective stress.

## Results and Discussion

**Repeated measures analysis of covariance.** We conducted a Nostalgia  $\times$  Meaning in Life  $\times$  Time repeated measures analysis of covariance (ANCOVA).<sup>5</sup> Tests of between-subjects effects revealed significant main effects for nostalgia and meaning in life. Across time, subjective stress was higher in the control ( $M = 0.68$ ,  $SD = 0.43$ ) than in the nostalgia ( $M = 0.37$ ,  $SD = 0.25$ ) condition,  $F(1, 27) = 11.21$ ,  $p < .003$ , and higher for low-meaning than for high-meaning participants ( $B = -.12$ ,  $SE = .06$ ),  $F(1, 27) = 4.51$ ,  $p < .05$ . There was also a marginal Nostalgia  $\times$  Meaning in Life interaction,  $F(1, 27) = 3.80$ ,  $p < .07$ , indicating that the tendency for low-meaning (compared with high-meaning) participants to experience more stress was stronger in the control condition ( $B = -.23$ ,  $SE = .10$ ),  $F(1, 27) = 6.05$ ,  $p < .021$ , than in the nostalgia condition ( $B = -.01$ ,  $SE = .06$ ),  $F(1, 27) = 0.02$ ,  $p = .88$ . These between-subjects effects, however, were qualified by interactions involving the within-subjects variable, time.

Tests of within-subjects effects yielded a significant main effect for time,  $F(2, 54) = 48.37$ ,  $p < .0001$ . The analysis also produced a significant Nostalgia  $\times$  Time interaction,  $F(2, 54) = 9.49$ ,  $p < .0003$ . In turn, this two-way interaction was qualified by a significant Nostalgia  $\times$  Meaning in Life  $\times$  Time interaction,  $F(2, 54) = 4.34$ ,  $p < .018$ . We examined this three-way interaction by testing the between-subjects effects of nostalgia and meaning in life (and their interaction) separately for each time point.

**Analysis of subjective stress by time point.** Analysis of baseline stress levels revealed a marginal effect for meaning in life only ( $B = -.09$ ,  $SE = .05$ ),  $F(1, 27) = 3.30$ ,  $p < .08$ , indicating

a tendency for low-meaning (compared with high-meaning) participants to report more subjective stress. This finding is not central to our present purposes but does provide some construct validation for the assessment of meaning in life.

Analysis of stress levels immediately following the TSST (+1 min) revealed significant main effects for nostalgia and meaning in life. Subjective stress was higher in the control ( $M = 1.38$ ,  $SD = 0.88$ ) than in the nostalgia ( $M = 0.67$ ,  $SD = 0.46$ ) condition,  $F(1, 27) = 14.24$ ,  $p < .0008$ , and higher for low-meaning than for high-meaning participants ( $B = -.23$ ,  $SE = .11$ ),  $F(1, 27) = 4.09$ ,  $p = .05$ . This effect was qualified, however, by a significant Nostalgia  $\times$  Meaning in Life interaction,  $F(1, 27) = 5.71$ ,  $p < .025$ . Tests of simple effects for nostalgia revealed that, for low-meaning participants, subjective stress was higher in the control condition than in the nostalgia condition,  $F(1, 27) = 15.90$ ,  $p < .0005$ . For high-meaning participants, there was no significant difference between control and nostalgia conditions,  $F(1, 27) = 0.85$ ,  $p = .36$ . Looked at differently, within the control condition, subjective stress was higher for low-meaning than for high-meaning participants ( $B = -.50$ ,  $SE = .19$ ),  $F(1, 27) = 7.13$ ,  $p < .013$ . In the nostalgia condition, there was no significant difference between low-meaning and high-meaning participants ( $B = .04$ ,  $SE = .13$ ),  $F(1, 27) = 0.11$ ,  $p = .75$ . Analysis of stress levels 30 min after completion of the TSST (+30 min) produced no significant effects,  $F_s(1, 27) < 2.26$ ,  $p_s > .15$ . Parallel results were obtained when controlling for baseline stress levels (see Figure 3).

Participants who were low (compared with high) in meaning in life were susceptible to experience heightened stress in the TSST, but this relative susceptibility was eliminated when they recalled a nostalgic (compared with an ordinary) event prior to the task. Nostalgia gave low-meaning participants the fortitude to maintain equanimity in a stressful situation. Thus, the results of Study 6 provide further evidence for the existential utility of nostalgia and suggest potential therapeutic value of nostalgia. Jointly, Studies 5 and 6 pave the way for future research to examine nostalgia as a potential clinical intervention. It appears that nostalgia may not only promote well-being for individuals with meaning deficits, it may also help these individuals cope with stressful life events.

## General Discussion

The present research provides evidence that nostalgia is a psychological resource that can be harnessed to derive and sustain a sense of meaning in life. Using survey and experimental methods, Studies 1 and 2 found that the link between nostalgia and personal meaning in life (which was established in a preliminary investigation) was mediated by social connectedness. Study 1 showed that music-evoked nostalgia was associated with the feeling of being loved and the concomitant sense that life is worth living. Study 2 demonstrated that reading nostalgic (compared with control) lyrics increased social connectedness (assessed with the com-

<sup>5</sup> All effects involving time remained significant after implementation of the Greenhouse-Geisser correction. Tests are based on data from 31 participants who completed all stress assessments. Stress ratings from three participants (two nostalgia condition, one control condition) were not recorded due to equipment malfunction. One participant (nostalgia condition) opted to terminate the experiment early due to a scheduling conflict.

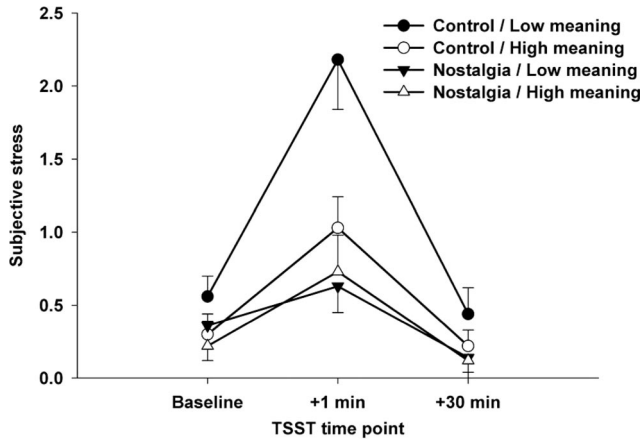


Figure 3. Subjective stress as a function of meaning in life and nostalgia at three Trier Social Stress Test (TSST) time points in Study 6. Plotted values are predicted means conditioned at one standard deviation above (high meaning) and below (low meaning) the average for meaning in life. Higher values reflect higher subjective stress. Error bars represent standard errors. Error bars are plotted in either upward or downward direction to enhance figure clarity.

prehensive SPS; Cutrona & Russell, 1987) and concomitant personal meaning in life.

Nostalgia also assumed a critical role when people encountered information that undermined their sense of meaning in life. Study 3 showed that threatened meaning heightens nostalgia. Participants who read an essay that threatened perceptions of meaning in life (compared with a no-threat essay) reported feeling more nostalgic. In turn, Study 4 highlighted the potential for nostalgia to afford protection from threats to meaning. Participants who were given the opportunity to become nostalgic, relative to those not given a nostalgia induction, responded less defensively to an essay that undermined perceptions of meaning (compared with a no-threat essay).

Finally, Studies 5 and 6 considered nostalgia as a means to promote well-being among people suffering from dispositional meaning deficits. Among individuals low in meaning in life, a nostalgia reflection task heightened a sense of vitality (Study 5) and mitigated subjective stress in the TSST (Kirschbaum et al., 1993)—a challenging public speaking and mental arithmetic task (Study 6). When considered together, the present studies offer convergent evidence for a meaning-bolstering function of nostalgia. In so doing, the studies complement and expand on existing functional analyses of this ubiquitous but understudied emotion (Routledge et al., 2008; Wildschut et al., 2006, 2010; Zhou et al., 2008).

### Broader Implications

Nostalgia was once considered “a cerebral disease” specific to Swiss mercenaries far from their homeland (Hofer, 1688/1934, p. 387) and a serious psychiatric condition and “immigrant psychosis” (Frost, 1938, p. 801). From these initial conceptualizations, nostalgia entered into a dormant state as far as psychological research or theoretical attention was concerned. For some time, nostalgia was primarily the subject of marketing research, which

identified it as a useful predictor of consumer preferences (Holbrook, 1993; Schindler & Holbrook, 2003; Stern, 1992). Recent empirical forays have rehabilitated nostalgia. Nostalgia is both commonplace and often psychologically advantageous. Research by Wildschut et al. (2006) attest to nostalgia’s ubiquity: 79% of undergraduate respondents in one survey indicated that they experienced nostalgia at least once a week. Boym’s (2001) cultural study of nostalgia further highlights its pervasiveness, and she proposes that it is an emotion with which virtually all adults can identify. Indeed, recent research showed that nostalgia was prevalent among Chinese undergraduate students, factory workers, and even children (Zhou et al., 2008).

What, then, are the psychological consequences of nostalgia? The present research adds to the growing catalogue of benefits of nostalgic reverie. Nostalgia increases positive mood, self-regard, and social connectedness (Wildschut et al., 2006). Furthermore, nostalgia buffers the deleterious effects of mortality salience (Routledge et al., 2008). Building on these findings, it is now evident that nostalgia facilitates perceptions of meaning in life. The present findings thus not only offer a novel connection to a broader literature on meaning but also inform understanding of when this psychological function of nostalgia can be triggered, its consequences for psychological functioning, and its implications for several areas of inquiry. For example, they complement findings in marketing research suggesting that people desire to purchase products for which they are nostalgic (Holak & Havlena, 1998; Schindler & Holbrook, 2003; Stern, 1992). If consumer products (e.g., music, movies, clothing) can trigger nostalgia and nostalgia heightens meaning, then perhaps it is no surprise that “retro marketing” is so prevalent and effective (Brown, Kozinets, & Sherry, 2003; Elliot, 2009).

### Limitations and Future Directions

The present research has a number of limitations and raises questions that future research would do well to address. For example, there may be merits to exploring the possibility that, for certain individuals or under certain situations, it may be rather challenging to extract the meaning-bolstering benefits of nostalgia (Iyer & Jetten, 2011). Thus, a preponderant focus on the past, at the expense of engaging in the present or becoming excited about the future, may leave some individuals with a negative contrast effect (i.e., cherishing the past would cause devaluing of the present). Individual differences in such domains as neuroticism with its linkage to affective instability (Miller & Pilkonis, 2006), or self-concept clarity with its implications for maintaining perceived continuity in life (Bluck & Alea, 2008; Ritchie, Sedikides, Wildschut, Arndt, & Gidron, in press), may be worth considering as moderators of the obtained effects.

Another area of potential integration concerns the interface between nostalgia and temporal distance. There are at least two ways in which such work might proceed. Ross and Wilson’s (2002) research showing that people adjust perceived temporal distance between the self and certain events so as to maximize positive self-evaluations (see also Heller, Stephan, Kifer, & Sedikides, 2011) suggests that, when people bolster meaning through nostalgia, they may be perceiving the nostalgic episode as more recently connected to their current life. In addition, Trope and Liberman’s (2010) research on temporal distance and cogni-



tive abstraction suggests that nostalgic events that are farther away in time may acquire some of their meaning-bolstering capacity through the increased abstraction with which they are viewed. We believe the invitation to pursue such directions is a generative contribution of the present work.

In a somewhat different vein, one might also wonder about the cross-cultural applicability of the psychological consequences of nostalgia. In this light, it is worth noting that the present studies were conducted in three countries (the United States, United Kingdom, and the Netherlands) and converge with other recent research on nostalgia conducted in the United Kingdom (Hart et al., 2011), the United States (Juhl et al., 2010; Vess, Arndt, Routledge, Sedikides, & Wildschut, in press), China (Stephan et al., 2011; Zhou et al., 2011, 2008), and the Netherlands (Loveland, Smeesters, & Mandel, 2010) to suggest that nostalgia and the functions it serves are not confined to a particular geographic location or culture. Indeed, the documentation of nostalgia effects in China is notable given this culture's greater levels of social interdependence (Cai et al., 2011). Of course, it may yet be interesting to examine whether certain types of nostalgia will afford greater meaning depending on cultural variations in what is valued. Thus, for example, in China (relative to the United Kingdom or United States), nostalgia surrounding more collectivistic events may impart greater meaning.

Future investigations may further probe how nostalgia is influenced by gender. In the present as well as previous studies (Hart et al., 2011; Routledge et al., 2008; Wildschut et al., 2006, 2010; Zhou et al., 2008), nostalgia served positive psychological functions equally for women and men. Nevertheless, research systematically focused on how gender impacts the content of nostalgia has yet to be conducted. The same can be said for age, but note that, in Study 1, age did not qualify the association between nostalgia and perceptions of meaning in life.

Future research should also consider the various channels by which nostalgia may heighten meaning. In the present studies, we provided evidence for a social channel. That is, both in an online survey (Study 1) and laboratory experiment (Study 2), social connectedness mediated the link between nostalgia and meaning in life. We chose to focus on social connectedness as a mediator in large part because previous research indicates that nostalgia is, for most people, highly social (Sedikides, Wildschut, Arndt, & Routledge, 2008; Sedikides, Wildschut, Routledge, Arndt, & Zhou, 2009; Wildschut et al., 2011), and relationships are a critical component of meaning-in-life judgments (Baumeister, 2005; Hicks et al., 2010; Williams, 2001). It is important to note, however, that there may be other channels through which nostalgia influences meaning (e.g., self-esteem). Indeed, with a focus on momentous events from bygone days, nostalgia may afford a broad sense of how different parts of one's life are interconnected and comprise a coherent narrative—something that can serve as a source of meaning (Heine, Proulx, & Vohs, 2006; Kray et al., 2010; C. L. Park, 2010; Sedikides, Wildschut, Gaertner, Routledge, & Arndt, 2008; Steger, Oishi, & Kashdan, 2009). Thus, a task of future research will be to consider other potential mediators as well as individual differences (e.g., narcissism) and situational forces (e.g., threats to the self) that might render mediators besides social connectedness more important. Yet, the present research indicates that feelings of social connected-

ness are at least partially responsible for nostalgia's capacity to bolster personal meaning.

The present findings also have implications for health and psychological adjustment. Zika and Chamberlain (1992; see also King & Napa, 1998; Kurdek, 1999; C. L. Park, 2010) reported that having a strong sense of meaning is associated with psychological well-being. Additionally, Reker, Peacock, and Wong (1987) highlighted that the dimensions of life purpose and future meaning predicted psychological well-being at almost every developmental stage, from adolescence to late adulthood. A sense of meaning in life is also related positively to successful coping (Debats, Drost, & Hansen, 1995; Janoff-Bulman, 1992; Updegraff et al., 2008). The experience of meaning in life can enable individuals to manage and cope with both pain and the course of an illness. For example, K. Park (2003) examined a group of patients with similar levels of chronic pain at preadmission. Patients who reported a high level of meaning experienced less pain and had lower levels of physical disability at discharge 1 year later. The psychological and physical benefits of holding positive perceptions of meaning also extend to effective treatment outcomes. Debats (1996) found that a strong sense of meaning in life predicted improvement during psychotherapy. Just as having a sense of meaning in life predicts positive well-being and coping outcomes, a lack of meaning is associated with psychological dysfunction and maladaptive health behavior. For example, lack of meaning is a predictor of depression (Wong, 1998) and even a precursor to suicide (Marsh, Smith, Piek, & Saunders, 2003). Frankl (1997) proposed that the existential pain of meaninglessness and an inability to find meaning could result in the development of negative health-related behaviors such as excessive drinking, drug abuse, and gambling. Indeed, excessive drinking has been related to poor purpose in life (Harlowe, Newcomb, & Bentler, 1986; Orcutt, 1984; Waisberg & Porter, 1994), as has drug abuse (Padelford, 1974).

In summary, a strong sense of meaning in life is a key contributor to maintaining an array of positive psychological and physical health outcomes. In contrast, a sense that life is meaningless is associated with low levels of well-being, higher levels of anxiety and distress, and the occurrence of negative health-related behaviors. Therefore, nostalgia, as a source of meaning, may be of great value to physical health and psychological well-being both when people respond to specific existential threats and, more generally, when they navigate the inevitable existential challenges of life. A crucial question is how to harness this power of nostalgia to assist those struggling to find meaning in life. Studies 5 and 6 offered a critical first step by demonstrating that a relatively brief nostalgia induction can, at least temporarily, bolster well-being and mitigate subjective stress among individuals with dispositional meaning deficits. Admittedly, these findings are limited by the fact that they were obtained mostly in undergraduate samples (but see Study 1) and relied on short self-report measures of well-being. Nonetheless, they inform future research on the utility of nostalgia to restore, maintain, and promote psychological and physical health. And of course, in this research we focused on the grander sense of meaning that provides an overarching sense of existential fortitude. The possibility that nostalgia may have implications for different levels of meaning-making and even extend to a rudimentary sense of relations between experiences and events is a topic that remains to be investigated.



## Concluding Remarks

In Western culture, it is regarded as unwise to be “living in the past.” Of course, a past-oriented state can be problematic, if it interferes extensively with living in the present and planning for the future. However, as the present research indicates, the past can also be a vital resource on which one might draw to maintain and enhance a sense of meaning. The present research broadens the functional landscape of nostalgia by demonstrating that this emotion serves a pivotal existential function.

## References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage Publications.
- Arndt, J., Cook, A., & Routledge, C. (2004). The blueprint of terror management: Understanding the cognitive architecture of psychological defense against the awareness of death. In J. Greenberg, S. L. Koole, & T. Pyszczynski (Eds.), *Handbook of experimental existential psychology* (pp. 35–53). New York, NY: Guilford Press.
- Arndt, J., Landau, M. J., Vail, K. E., III, & Vess, M. (in press). An edifice for enduring personal value: A terror management perspective on the human quest for multi-level meaning. In K. Markman, T. Proulx, & M. Lindberg (Eds.), *The psychology of meaning*. Washington, DC: American Psychological Association.
- Arndt, J., Routledge, C., Greenberg, J., & Sheldon, K. M. (2005). Illuminating the dark side of creative expression: Assimilation needs and the consequences of creative action following mortality salience. *Personality and Social Psychology Bulletin*, *31*, 1327–1339.
- Barrett, F. S., Grimm, K. J., Robins, R. W., Wildschut, T., Sedikides, C., & Janata, P. (2010). Music-evoked nostalgia: Affect, memory, and personality. *Emotion*, *10*, 390–403.
- Bauer, D. J., Preacher, K. J., & Gil, K. M. (2006). Conceptualizing and testing random indirect effects and moderated mediation in multilevel models: New procedures and recommendations. *Psychological Methods*, *11*, 142–163.
- Baumeister, R. (1991). *Meanings of life*. New York, NY: Guilford Press.
- Baumeister, R. (2005). Rejected and alone. *The Psychologist*, *18*, 732–735.
- Becker, E. (1971). *The birth and death of meaning*. New York, NY: Free Press.
- Becker, E. (1973). *The denial of death*. New York, NY: Free Press.
- Berger, P. L., & Luckmann, T. (1967). *The social construction of reality*. Garden City, NY: Anchor.
- Bluck, S., & Alea, N. (2008). Remembering being me: The self continuity function of autobiographical memory in younger and older adults. In F. Sani (Ed.), *Self-continuity: Individual and collective perspectives* (pp. 55–70). New York, NY: Psychology Press.
- Boym, S. (2001). *The future of nostalgia*. New York, NY: Basic Books.
- Brook, R. H., Ware, J. E., Davis-Avery, A., . . . Johnston, S. A. (1979). *Conceptualization and measurement of health for adults in the Health Insurance Study: Vol. 8, Overview* (Publication No. R-198/8-HEW). Santa Monica, CA: RAND Corporation.
- Brown, S., Kozinets, R. V., & Sherry, J. F. (2003). Teaching old brands new tricks: Retro branding and the revival of brand meaning. *Journal of Marketing*, *67*, 19–33.
- Bruner, J. S. (1990). *Acts of meaning*. Cambridge, MA: Harvard University Press.
- Cai, H., Sedikides, C., Gaertner, L., Wang, C., Carvallo, M., Xu, Y., . . . Jackson, L. E. (2011). Tactical self-enhancement in China: Is modesty at the service of self-enhancement in East-Asian culture? *Social Psychological and Personality Science*, *2*, 59–64.
- Cohen, J., Cohen, P., West, L. G., & Aiken, L. S. (2003). *Applied multiple regression/correlational analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.
- Cutrona, C. E., & Russell, D. (1987). The provisions of social relationships and adaptation to stress. In W. H. Jones & D. Perlman (Eds.), *Advances in personal relationships* (Vol. 1, pp. 37–67). Greenwich, CT: JAI Press.
- Debats, D. L. (1996). Meaning in life: Clinical relevance and predictive power. *British Journal of Clinical Psychology*, *35*, 503–516.
- Debats, D. L., Drost, J., & Hansen, P. (1995). Experiences of meaning in life: A combined qualitative and quantitative approach. *British Journal of Psychology*, *86*, 359–375.
- Dickerson, S. S., & Kemeny, M. E. (2004). Acute stressors and cortisol responses: A theoretical integration and synthesis of laboratory research. *Psychological Bulletin*, *130*, 355–391.
- Diener, E., Emmons, R., Larsen, J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, *49*, 71–75.
- Elliot, S. (2009). Warm and fuzzy makes a comeback. *The New York Times*. Retrieved from <http://www.nytimes.com/2009/04/07/business/media/07adco.html>
- Florian, V., & Mikulincer, M. (2004). A multifaceted perspective on the existential meanings, manifestations, and consequences of the fear of personal death. In J. Greenberg, S. L. Koole, & T. Pyszczynski (Eds.), *Handbook of experimental existential psychology* (pp. 54–70). New York, NY: Guilford Press.
- Fodor, N. (1950). Varieties of nostalgia. *Psychoanalytic Review*, *37*, 25–38.
- Frankl, V. E. (1959). *Man's search for meaning*. New York, NY: Washington Square Press.
- Frankl, V. E. (1997). *Man's search for ultimate meaning*. New York, NY: Plenum Press.
- Frost, I. I. (1938). Home-sickness and immigrant psychoses. Austrian and German domestic servants the basis of study. *Journal of Mental Science*, *84*, 801–847.
- Green, J. D., Sedikides, C., & Gregg, A. P. (2008). Forgotten but not gone: The recall and recognition of self-threatening memories. *Journal of Experimental Social Psychology*, *44*, 547–561.
- Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A., Veeder, M., Kirkland, S., & Lyon, D. (1990). Evidence for terror management II: The effects of mortality salience on reactions to those who threaten or bolster the cultural worldview. *Journal of Personality and Social Psychology*, *58*, 308–318.
- Harlowe, L., Newcomb, M., & Bentler, P. (1986). Depression, self-derogation, substance abuse, and suicide ideation: Lack of purpose in life as a mediational factor. *Journal of Clinical Psychology*, *42*, 5–21.
- Harmon-Jones, E., Simon, L., Greenberg, J., Pyszczynski, T., Solomon, S., & McGregor, H. (1997). Terror management theory and self-esteem: Evidence that increased self-esteem reduces mortality salience effects. *Journal of Personality and Social Psychology*, *72*, 24–36.
- Hart, C. M., Sedikides, C., Wildschut, T., Arndt, J., Routledge, C., & Vingerhoets, Ad, J. J. M. (2011). Nostalgic recollections of high and low narcissists. *Journal of Research in Personality*, *45*, 238–242.
- Heine, S. J., Proulx, T., & Vohs, K. D. (2006). The meaning maintenance model: On the coherence of social motivations. *Personality and Social Psychology Review*, *10*, 88–111.
- Heller, D., Stephan, E., Kifer, Y., & Sedikides, C. (2011). What will I be? The role of temporal perspective on predictions of affect, traits, and self-narratives. *Journal of Experimental Social Psychology*, *47*, 610–615.
- Hicks, J. A., Schlegel, R. J., & King, L. A. (2010). Social threats, happiness, and the dynamics of meaning in life judgments. *Personality and Social Psychology Bulletin*, *36*, 1305–1317.
- Hofer, J. (1934). Medical dissertation on nostalgia (C. K. Anspach, Trans.). *Bulletin of the History of Medicine*, *2*, 376–391. (Original work published 1688)
- Holak, S. L., & Havlena, W. J. (1992). Nostalgia: An exploratory study of themes and emotions in the nostalgic experience. In J. F. Sherry Jr. & B.

- Sternthal (Eds.), *Advances in consumer research* (Vol. 19, pp. 380–387). Provo, UT: Association for Consumer Research.
- Holak, S. L., & Havlena, W. J. (1998). Feelings, fantasies, and memories: An examination of the emotional components of nostalgia. *Journal of Business Research*, *42*, 217–226.
- Holbrook, M. B. (1993). Nostalgia and consumption preferences: Some emerging patterns of consumer tastes. *Journal of Consumer Research*, *20*, 245–256.
- Iyer, A., & Jetten, J. (2011, February 28). What's left behind: Identity continuity moderates the effect of nostalgia on well-being and life choices. *Journal of Personality and Social Psychology*. Advance online publication. doi:10.1037/a0022496
- Janata, P. J., Tomic, S. T., & Rakowski, S. K. (2007). Characterization of music-evoked autobiographical memories. *Memory*, *15*, 845–860.
- Janoff-Bulman, R. (1992). *Shattered assumptions: Towards a new psychology of trauma*. New York, NY: Free Press.
- Jim, H. S., & Andersen, B. L. (2007). Meaning in life mediates the relationship between social and physical functioning and distress in cancer survivors. *British Journal of Health Psychology*, *12*, 363–381.
- Juhl, J., Routledge, C., Arndt, J., Sedikides, C., & Wildschut, T. (2010). Fighting the future with the past: On the death-anxiety buffering function of nostalgia. *Journal of Research in Personality*, *44*, 309–314.
- Juslin, P. N., Liljestrom, S., Vastfjall, D., Barradas, G., & Silva, A. (2008). An experience sampling study of emotional reactions to music: Listener, music, and situation. *Emotion*, *8*, 668–683.
- King, L. A., & Napa, C. K. (1998). What makes a good life? *Journal of Personality and Social Psychology*, *75*, 156–165.
- Kirschbaum, C., Pirke, K.-M., & Hellhammer, D. H. (1993). The 'Trier Social Stress Test'-A tool for investigating psychobiological stress responses in a laboratory setting. *Neuropsychobiology*, *28*, 76–81.
- Krause, N. (2007). Evaluating the stress-buffering function of meaning in life among older people. *Journal of Aging and Health*, *19*, 792–812.
- Kray, L. J., George, L. G., Liljenquist, K. A., Galinsky, A. D., Tetlock, P. E., & Roese, N. J. (2010). From what might have been to what must have been: Counterfactual thinking creates meaning. *Journal of Personality and Social Psychology*, *98*, 106–118.
- Kudielka, B. M., Hellhammer, D. H., & Kirschbaum, C. (2007). Ten years of research with the Trier Social Stress Test - revisited. In E. Harmon-Jones & P. Winkelman (Eds.), *Social neuroscience* (pp. 56–83). New York, NY: Guilford Press.
- Kumashiro, M., & Sedikides, C. (2005). Taking on board liability-focused feedback: Close positive relationships as a self-bolstering resource. *Psychological Science*, *16*, 732–739.
- Kurdek, L. A. (1999). The nature and predictors of the trajectory of change in marital quality for husbands and wives over the first 10 years of marriage. *Developmental Psychology*, *35*, 1283–1296.
- Lambert, N. M., Stillman, T. F., Baumeister, R. F., Fincham, F. D., Hicks, J. A., & Graham, S. M. (2010). Family as a salient source of meaning in young adulthood. *Journal of Positive Psychology*, *5*, 367–376.
- Loveland, K. E., Smeesters, D., & Mandel, N. (2010). Still preoccupied with 1995: The need to belong and preference for nostalgic products. *Journal of Consumer Research*, *37*, 393–408.
- Low, G., & Molzahn, A. E. (2007). Predictors of quality of life in old age: A cross-validation study. *Research in Nursing*, *30*, 141–150.
- Marsh, A., Smith, L., Piek, J., & Saunders, B. (2003). The Purpose in Life scale: Psychometric properties for social drinkers and drinkers in alcohol treatment. *Educational and Psychological Measurement*, *63*, 859–871.
- McCann, W. H. (1941). Nostalgia: A review of the literature. *Psychological Bulletin*, *38*, 165–182.
- McGregor, I., & Little, B. R. (1998). Personal projects, happiness, and meaning: On doing well and being yourself. *Journal of Personality and Social Psychology*, *74*, 494–512.
- Mikulincer, M., Florian, V., & Hirschberger, G. (2003). The existential function of close relationships: Introducing death into the science of love. *Personality and Social Psychology Review*, *7*, 20–40.
- Miller, J., & Pilkonis, P. (2006). Neuroticism and affective instability: The same or different? *The American Journal of Psychiatry*, *163*, 839–845.
- The New Oxford Dictionary of English*. (1998). Oxford, England: Oxford University Press.
- Orcutt, J. (1984). Contrasting effects of two kinds of boredom on alcohol use. *Journal of Drug Issues*, *14*, 161–173.
- Padelford, B. (1974). Relationship between drug involvement and purpose in life. *Journal of Clinical Psychology*, *30*, 303–305.
- Park, C. L. (2010). Making sense of the meaning literature: An integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin*, *136*, 257–301.
- Park, C. L., & Folkman, S. (1997). Meaning in the context of stress and coping. *Review of General Psychology*, *1*, 115–144.
- Park, J. L. (2001). *Our existential predicament: Loneliness, depression, anxiety and death*. Minneapolis, MN: Existential Books.
- Park, K. (2003). Meaning in life as a predictor of outcome in chronic pain patients: A quantitative and qualitative study. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *63*, 3933.
- Reker, G. T., Peacock, E. J., & Wong, P. T. P. (1987). Meaning and purpose in life and well-being: A life span perspective. *Journal of Gerontology*, *42*, 44–49.
- Ritchie, T. D., Sedikides, C., Wildschut, T., Arndt, J., & Gidron, Y. (in press). Self-concept clarity mediates the relation between stress and subjective well-being. *Self and Identity*.
- Rosen, G. (1975). Nostalgia: A "forgotten" psychological disorder. *Psychological Medicine*, *5*, 340–354.
- Ross, M., & Wilson, A. E. (2002). It feels like yesterday: Self-esteem, valence of personal past experiences, and judgments of subjective distance. *Journal of Personality and Social Psychology*, *82*, 792–803.
- Routledge, C., & Arndt, J. (2005). Time and terror: Managing temporal consciousness and the awareness of mortality. In A. Strathman & J. Joireman (Eds.), *Understanding behaviour in the context of time: Theory, research, and applications* (pp. 59–84). Mahwah, NJ: Erlbaum.
- 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*, 132–140.
- Russell, D., Cutrona, C. E., Rose, J., & Yurko, K. (1984). Social and emotional loneliness: An examination of Weiss's typology of loneliness. *Journal of Personality and Social Psychology*, *46*, 1313–1321.
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaemonic well-being. *Annual Review of Psychology*, *52*, 141–166.
- Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, *65*, 529–565.
- Ryff, C. D. (1989). Happiness is everything or is it? Explorations of the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*, 1069–1081.
- Schimmel, J., Hayes, J., Williams, T. J., & Jahrig, J. (2007). Is death really the worm at the core? Converging evidence that worldview threat increases death-thought accessibility. *Journal of Personality and Social Psychology*, *92*, 789–803.
- Schindler, R. M., & Holbrook, M. B. (2003). Nostalgia for early experience as a determinant of consumer preferences. *Psychology and Marketing*, *20*, 275–302.
- Schlotz, W., & Kumsta, R. (2011). *The subjective-emotional response scale (SERS)*. Unpublished manuscript, School of Psychology, University of Southampton, Southampton, UK.
- Schlotz, W., Kumsta, R., Layes, I., Entringer, S., Jones, A., & Wüst, S. (2008). Covariance between psychological and endocrine responses to pharmacological challenge and psychosocial stress: A question of timing. *Psychosomatic Medicine*, *70*, 787–796.

- Sedikides, C., Wildschut, T., Arndt, J., & Routledge, C. (2008). Nostalgia: Past, present, and future. *Current Directions in Psychological Science*, 17, 304–307.
- Sedikides, C., Wildschut, T., Arndt, J., & Routledge, C. D. (2006). Affect and the self. In J. P. Forgas (Ed.), *Affect in social thinking and behavior: Frontiers in social psychology* (pp. 197–215). New York, NY: Psychology Press.
- Sedikides, C., Wildschut, T., & Baden, D. (2004). Nostalgia: Conceptual issues and existential functions. In J. Greenberg, S. Koole, & T. Pyszczynski (Eds.), *Handbook of experimental existential psychology* (pp. 200–214). New York, NY: Guilford Press.
- Sedikides, C., Wildschut, T., Gaertner, L., Routledge, C., & Arndt, J. (2008). Nostalgia as enabler of self-continuity. In F. Sani (Ed.), *Self-continuity: Individual and collective perspectives* (pp. 227–239). New York, NY: Psychology Press.
- Sedikides, C., Wildschut, T., Routledge, C., Arndt, J., & Zhou, X. (2009). Buffering acculturative stress and facilitating cultural adaptation: Nostalgias as a psychological resource. In R. S. Wyer Jr., C.-y. Chiu, & Y.-y. Hong (Eds.), *Understanding culture: Theory, research, and application* (pp. 361–378). New York, NY: Psychology Press.
- Sherman, D. K., & Cohen, G. L. (2006). The psychology of self-defense: Self-affirmation theory. *Advances in Experimental Social Psychology*, 38, 183–242.
- Singer, J. D. (1998). Using SAS PROC MIXED to fit multilevel models, hierarchical models, and individual growth models. *Journal of Educational and Behavioral Statistics*, 24, 323–355.
- Solomon, S., Greenberg, J., & Pyszczynski, T. (1991). Terror management theory of self-esteem. In C. R. Snyder & D. Forsyth (Eds.), *Handbook of social and clinical psychology: The health perspective* (pp. 21–40). New York, NY: Pergamon Press.
- Steger, M. F., & Frazier, P. (2005). Meaning in life: One link in the chain from religion to well-being. *Journal of Counseling Psychology*, 4, 574–582.
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The Meaning in Life Questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology*, 53, 80–93.
- Steger, M., Oishi, S., & Kashdan, T. B. (2009). Meaning in life across the life span: Levels and correlates of meaning in life from emerging adulthood to older adulthood. *Journal of Positive Psychology*, 4, 43–52.
- Stephan, E., Sedikides, C., Wildschut, T., Routledge, C., Zhou, X., Kang, L., & Vingerhoets, A. J. J. M. (2011). *Nostalgia regulates avoidance and approach motivation*. Manuscript submitted for publication.
- Stern, B. B. (1992). Historical and personal nostalgia in advertising text: The *fin de siècle* effect. *Journal of Advertising*, 21, 11–22.
- Stillman, T. F., Baumeister, R. F., Lambert, N. M., Crescioni, A., DeWall, C., & Fincham, F. D. (2009). Alone and without purpose: Life loses meaning following social exclusion. *Journal of Experimental Social Psychology*, 45, 686–694.
- Taylor, J. (1953). A personality scale of manifest anxiety. *Journal of Abnormal and Social Psychology*, 48, 285–290.
- Trope, Y., & Liberman, N. (2010). Construal level theory of psychological distance. *Psychological Review*, 117, 440–463.
- Updegraff, J. A., Cohen Silver, R., & Holman, E. A. (2008). Searching for and finding meaning in collective trauma: Results from a national longitudinal study of the 9/11 terrorist attacks. *Journal of Personality and Social Psychology*, 95, 709–722.
- Vess, M., Arndt, J., Routledge, C., Sedikides, C., & Wildschut, T. (in press). Nostalgia as a resource for the self. *Self and Identity*.
- Waisberg, J., & Porter, J. (1994). Purpose in life and outcome of treatment for alcohol dependence. *British Journal of Clinical Psychology*, 33, 49–63.
- Waterman, A. S. (1993). Two conceptions of happiness: Contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment. *Journal of Personality and Social Psychology*, 64, 678–691.
- Weiss, R. S. (1974). The provisions of social relationships. In Z. Rubin (Ed.), *Doing unto others* (pp. 17–26). Englewood, NJ: Prentice Hall.
- Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. D. (2006). Nostalgia: Content, triggers, functions. *Journal of Personality and Social Psychology*, 91, 975–993.
- Wildschut, C., Sedikides, C., & Cordaro, F. (2011). Self-regulatory interplay between negative and positive emotions: The case of loneliness and nostalgia. In I. Nyklicek, A. J. J. M. Vingerhoets, & M. Zeelenberg (Eds.), *Emotion regulation and well-being* (pp. 67–83). New York, NY: Springer.
- 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, 573–586.
- Williams, K. D. (2001). *Ostracism: The power of silence*. New York, NY: Guilford Press.
- Wong, P. T. P. (1998). Implicit theories of meaningful life and the development of the personal meaning profile. In P. T. P. Wong & P. S. Fry (Eds.), *The human quest for meaning: A handbook of psychological research and clinical applications* (pp. 111–140). Mahwah, NJ: Erlbaum.
- Zentner, M., Grandjean, D., & Scherer, K. R. (2008). Emotions evoked by the sound of music: Characterization, classification, and measurement. *Emotion*, 8, 494–521.
- Zhou, X., Fu, B., Wildschut, T., Sedikides, C., Luo, H., & Feng, C. (2011). *Nostalgia: The gift that keeps on giving*. Manuscript submitted for publication.
- Zhou, X., Sedikides, C., Wildschut, C., & Gao, D.-G. (2008). Counteracting loneliness: On the restorative function of nostalgia. *Psychological Science*, 19, 1023–1029.
- Zika, S., & Chamberlain, K. (1992). On the relation between meaning in life and psychological well-being. *British Journal of Psychology*, 83, 133–145.

Received January 25, 2010

Revision received April 29, 2011

Accepted May 13, 2011 ■