Running head: NOSTALGIA AND OPTIMISM

In press, Personality and Social Psychology Bulletin

Back to the Future: Nostalgia Increases Optimism

Wing Yee Cheung, Tim Wildschut, and Constantine Sedikides

University of Southampton

Erica G. Hepper

University of Surrey

Jamie Arndt

University of Missouri—Columbia

Ad J. J. M. Vingerhoets

Tilburg University

Word Count: 9997

Wing Yee Cheung, Tim Wildschut, and Constantine Sedikides, School of Psychology, University of Southampton, UK; Erica G. Hepper, School of Psychology, University of Surrey, UK; Jamie Arndt, Department of Psychological Sciences, University of Missouri—Columbia, USA; Ad J. J. M. Vingerhoets, Department of Medical and Clinical Psychology, Tilburg University, The Netherlands. Please address correspondence to Wing Yee Cheung, Centre for Research on Self and Identity, School of Psychology, University of Southampton, Southampton SO17 1BJ, UK; Tel: +44 (0)23 80594584; Fax: +44 (0)23 80593328; E-mail: W.Y.Cheung@soton.ac.uk

Abstract

This research examined the proposition that nostalgia is not simply a past-oriented emotion, but its scope extends into the future, and, in particular, a positive future. We adopted a convergent validation approach, using multiple methods to assess the relation between nostalgia and optimism. Study 1 tested whether nostalgic narratives entail traces of optimism; indeed, nostalgic (compared to ordinary) narratives contained more expressions of optimism. Study 2 manipulated nostalgia through the recollection of nostalgic (vs. ordinary) events, and showed that nostalgia boosts optimism. Study 3 demonstrated that the effect of nostalgia (induced with nomothetically-relevant songs) on optimism is mediated by self-esteem. Finally, Study 4 established that nostalgia (induced with idiographically-relevant lyrics) fosters social connectedness, which subsequently increases self-esteem, which then boosts optimism. The nostalgic experience is inherently optimistic and paints a subjectively rosier future.

Keywords: nostalgia, optimism, emotion, memory, self-esteem, social connectedness

Back to the Future: Nostalgia Increases Optimism

The capacity for mental time travel is considered uniquely human (Sedikides & Skowronski, 1997; Suddendorf & Corballis, 2007). Recollection of the past, consideration of the present, and projection onto the future are interdependent cognitive processes with a shared neurological substrate (Johnson & Sherman, 1990; Klein, Robertson, & Delton, 2010). Hence, if the present self derives positivity from one's past, as research shows is typically the case in nostalgic reverie (Hepper, Ritchie, Sedikides, & Wildschut, 2012; Sedikides, Wildschut, Arndt, & Routledge, 2008; Wildschut, Sedikides, Arndt, & Routledge, 2006), this positivity could stretch out in time and produce a brighter outlook on the future. Stated otherwise, when individuals become nostalgic, they may accordingly feel optimistic about their future. We test this proposition while also examining mechanisms through which nostalgia may elicit optimism.

Historical and Contemporary Conceptions of Nostalgia

Nostalgia has historically been conceptualized as pathological maladaptation to the present reality and as trepidation of the future (Sedikides et al., 2008; Sedikides, Wildschut, & Baden, 2004). In the 17th century, physician Johannes Hofer (1688/1934) coined the term nostalgia to describe physical and psychological symptoms among Swiss mercenaries fighting away from home and for assorted European monarchs. Since then, nostalgia has been labeled a neurological disease (Scheuchzer, 1731) and a psychological disorder (e.g., repressive compulsion, psychosis; Sterba, 1940). The consensus was that nostalgic individuals are preoccupied with bygone events or objects, such that "their longing for the past matches their dislike of the present and their dread of the future" (Castelnuovo-Tedesco, 1980, p.121). In nostalgia, "the past is lost. The future can never be realized. All is empty. All is lost." (Kleiner, 1977, p.472).

Nostalgia, then, was long considered a doomed state of mind: an escapist reaction to the demands of the present and an anxiety toward the future (Nawas & Jerome, 1965). These views began to fade in the late 20th century with the suggestion that nostalgia may, to some extent, be a positive and useful emotion (Davis, 1979), although robust opposition to this

suggestion remained the norm (for reviews, see: Sedikides, Wildschut, Arndt, & Routledge, 2006; Sedikides et al., 2004).

Recent empirical forays have paved the way toward rehabilitation of the construct of nostalgia. Laypersons indicate that positive feelings (e.g., happiness, fondness) are more prototypical of nostalgia than are negative feelings (e.g., sadness, regret) (Hepper, Ritchie, et al., 2012). Indeed, nostalgic narratives may be bittersweet, but their positive affect (e.g., tenderness) far outweighs their negative affect (e.g., loss) (Holak & Havlena, 1998; Stephan, Sedikides, & Wildschut, 2012). In addition, content analyses on nostalgic narratives reveal that nostalgia is a self-relevant emotion, and that nostalgic memories entail interactions with valued others in the context of momentous life occasions (Holak & Havlena, 1992; Wildschut et al., 2006). Further, nostalgic narratives are distinguishable from narratives of positive or ordinary events: the linguistic representation of nostalgic narratives involves the use of more meaning-ascribing abstract terms, elicits a greater sense of authenticity, and manifests a bittersweet affective signature (Stephan et al., 2012). It follows that the experimental induction of nostalgia may confer psychological benefits, and this is the case. For example, nostalgia raises self-esteem (Hepper, Ritchie, et al., 2012; Vess, Arndt, Routledge, Sedikides, & Wildschut, 2012; Wildschut et al., 2006) and fosters social connectedness (Wildschut et al., 2006; Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010; Zhou, Sedikides, Wildschut, & Gao, 2008).

Understanding Nostalgia in a Brand New Light:

The Future Orientation of Nostalgia

In all, nostalgia, a seemingly past-oriented emotion, renders the present more positive. But does it also shed a positive light on the future? To be exact, does it breed optimism?

The literature is mute on the topic. Yet, answers to these questions can have theoretical and practical implications. From a theoretical standpoint, answers may inform the nature of nostalgia and the breadth of its psychological utility, as well as provide a broader understanding of the implications of the human capacity for temporal thought. From a practical standpoint, answers may identify a critical antecedent of optimism—a trait or state linked with enhancing well-being and effective coping, and with dampening negative affect

and symptom reporting (Andersson, 1996; Carver, Scheier, & Segerstrom, 2010; K. E. Hart & Hittner, 1995; Isaacowitz, 2005; Scheier & Carver, 1992). With the exception of a few studies on genetic (vs. environmental) and developmental influences on optimism (Ek, Remes, & Sovio, 2004; Gillham & Reivich, 2004; Heinonen, Räikkönen, & Keltikangas-Järvinen, 2005; Mosing, Zietsch, Shekar, Wright, & Martin, 2009; Scheier & Carver, 1993), research on trait, let alone state, antecedents or causes of optimism is sparse.

Sociologist Fred Davis (1977) was the first to suggest that nostalgia may promote a sunny outlook on the future. He mused (p. 420):

It (nostalgia) reassures us of past happiness and accomplishment; and, since these still remain on deposit, as it were, in the bank of our memory, it simultaneously bestows upon us a certain worth, irrespective of how present circumstances may seem to question or obscure this. And current worth, as our friendly bank loan officer assures us, is entitled to at least some claim on the future as well.

Davis's idea that nostalgia constitutes a deposit in the bank of memory to be retrieved in the service of the future is consistent with recent findings that individuals treasure nostalgic memories as a resource for maximizing future well-being (Zauberman, Ratner, & Kim, 2009). The idea is also consistent with other lines of inquiry.

First, recollection and future projection share cognitive processes and neurological underpinnings. Clinical evidence indicates that patients with difficulty in retrieving the past also have problems imagining new experiences (Hassabis, Kumaran, Vann, & Maguire, 2007; Klein, Loftus, & Kihlstrom, 2002; Tulving, 1985) or describing their future in detail (Addis, Sacchetti, Ally, Budson, & Schacter, 2009; Brown, Dorfman, Marmar, & Bryant, 2012). Similarly, neuroimaging studies show that thinking about the past and the future involve a common neural network (Buckner & Carroll, 2007; Hassabis & Maguire, 2007; Schacter & Addis, 2007; Viard et al., 2011). The human mind, then, recruits similar processes in formulating mental representations of past and future events. It follows that, if nostalgic recollection activates past positivity, this positivity may be projected onto the future.

Second, recollection and future projection are interdependent (Johnson & Sherman, 1990). Past experiences predict optimism in judgment or decision-making (Albarracín &

Wyer, 2000) and in interpersonal relationships (Carnelley & Janoff-Bulman, 1992). Accordingly, nostalgic recollection of fond memories may generate a buoyant outlook on the future.

How Would Nostalgia Elicit Optimism?

The Role of Self-Esteem and Social Connectedness

What are the mechanisms through which nostalgia may elicit optimism? Davis (1977), as quoted above, speculated that, when nostalgic, individuals retrieve positivity accumulated from the past to boost their current self-worth, thus feeling upbeat about the future. In line with this speculation, we propose that self-esteem constitutes a key mechanism linking nostalgia to optimism or through which nostalgia infuses optimism. Individuals may use their recollections of the past to raise their self-worth (Peetz & Wilson, 2008; Wilson & Ross, 2003), and, as we mentioned previously, research has specifically established that nostalgia lifts self-esteem (Hepper, Ritchie, et al., 2012; Wildschut et al., 2006). Importantly, self-esteem is associated with optimism (Chemers, Watson, & May, 2000; Mäkikangas & Kinnunen, 2003; Mäkikangas, Kinnunen, & Feldt, 2004) and shares a genetic basis with it (Saphire-Bernstein, Way, Kim, Sherman, & Taylor, 2011). Nevertheless, self-esteem and optimism are sufficiently distinct (Fontaine & Jones, 1997; Scheier, Carver, & Bridges, 1994) to warrant treatment as relatively independent resources.

But where does self-esteem originate? A commonality among relevant theoretical statements (contingencies of self-worth: Crocker & Wolfe, 2001; sociometer theory: Leary, 2005; terror-management theory: Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004) is an emphasis on the social or sociocultural bases of self-esteem. Self-esteem originates in, or is greatly influenced by, relational and sociocultural processes. From the perspective of the current investigation, social connectedness may form a pivotal foundation for self-esteem. As mentioned above, research has established that nostalgia strengthens social connectedness (Wildschut et al., 2006, 2010). For example, sociality (e.g., family, love) is a centrally prototypical feature of the construct of nostalgia (Hepper, Ritchie, et al., 2012). Also, experimentally induced nostalgia prompts stronger perceived affiliation with others (Zhou et al., 2008; Zhou, Wildschut, Sedikides, Shi, & Feng, 2012). Social connectedness, in turn,

would augment self-esteem, which would boost optimism. Indeed, preliminary evidence indicates that social support can operate through self-esteem to influence optimism (Symister & Friend, 2003). Of course, it is also possible that social connectedness (having been induced through experimental manipulations of nostalgia) directly incites an upsurge in optimism, given that social connectedness (i.e., perceived social support) is associated with or predicts optimism (Brissette, Scheier, & Carver, 2002; MacLeod & Conway, 2005; Segerstrom, 2007). We test for these possibilities in the present research.

Overview

We examine for the first time the future orientation of nostalgia and the possibility that nostalgia serves as a resource through which individuals may generate optimism internally, that is, with no reliance on accomplishments or external signals of social acceptance. We conducted four studies. In Study 1, we tested whether nostalgia naturally incorporates optimism, by counting the percentage of optimism-related words in nostalgic narratives. The remaining three studies featured experimental inductions of nostalgia. We adopted a convergent validation approach (Campbell & Fiske, 1959) in manipulating nostalgia via multiple methods. In Study 2, we induced nostalgia via recollection of nostalgic (vs. ordinary autobiographical) events, and asked whether nostalgia boosts optimism. In Study 3, we manipulated nostalgia with a nomothetically-relevant nostalgic (vs. control) song. We tested whether self-esteem mediates the relation between nostalgia and optimism. Finally, in Study 4, we presented idiographically-relevant nostalgic (vs. control) lyrics. We examined whether social connectedness (a) forms the basis for self-esteem's mediational role in the relation between nostalgia and optimism, or (b) mediates directly the relation between nostalgia and optimism.

Study 1

Previous research has highlighted the strengths of word-level linguistic analysis in uncovering psychological processes within written texts (Rude, Gortner, & Pennebaker, 2004). We used this methodology to investigate, in Study 1, whether nostalgic narratives contain more optimism-related words (optimism expressions) than ordinary autobiographical narratives.

We also sought to examine the role of positive affect (PA) in the relation between nostalgia and optimism. The content of nostalgic narratives is more positive than negative (Stephan et al., 2012; Wildschut et al., 2006). Also, nostalgia typically (Hepper, Ritchie, et al., 2012; Stephan et al., 2012; Verplanken, 2012; Wildschut et al., 2006, 2010; Zhou, Wildschut, Sedikides, Shi, et al., 2012, Study 1) but not always (Zhou, Wildschut, Sedikides, Shi, et al., 2012, Studies 2-4) increases PA. Although research has begun to establish unique effects of nostalgia above and beyond PA (Routledge, Wildschut, Sedikides, Juhl, & Arndt, 2012, Studies 2-3; Stephan et al., 2012, Study 2), it is not clear whether nostalgia would entail optimism above and beyond PA.

Method

Participants. One hundred and two University of Southampton undergraduates (92 women, 10 men) participated for course credit. Participant age ranged from 18-38 years ($M = 20.09$, $SD = 2.87$). We randomly assigned participants to the nostalgia and control conditions. Given that the results were not qualified by gender (with acknowledgment of the small number of male participants), we omitted this variable from subsequent analyses.

Procedure and materials. In the nostalgia condition, participants were instructed to "... bring to mind a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic." In the control condition, participants were instructed to "... bring to mind an ordinary event in your life." Participants in both conditions took a few moments to think about the event and how it made them feel. They were then allotted 5 minutes to provide a written account of the experience. Next, participants completed a 3-item nostalgia manipulation check (1 = *strongly disagree*, 6 = *strongly agree*): "Right now, I am feeling quite nostalgic," "Right now, I am having nostalgic feelings," "I feel nostalgic at the moment" ($\alpha = .97$, $M = 3.92$, $SD = 1.47$). Both the nostalgia induction and manipulation check have been validated by prior research in the UK (Hepper, Ritchie, et al., 2012; Stephan et al., 2012; Wildschut et al., 2006,) the US (Routledge, Arndt, Sedikides, & Wildschut, 2008; Routledge et al., 2011, 2012), and also in China (Zhou et al., 2008; Zhou, Wildschut, Sedikides, Chen, & Vingerhoets, 2012; Zhou, Wildschut, Sedikides, Shi, et al., 2012).

Participant-generated narratives were transcribed by a research assistant and analyzed with Linguistic Inquiry and Word Count software (Pennebaker, Booth, & Francis, 2007). LIWC works according to an internal dictionary of approximately 4500 words, and calculates the relative frequency (i.e., proportion) of different word categories. Participants wrote an average of 117.74 words ($SD = 39.61$). Average word counts in the nostalgia ($M = 122.85$, $SD = 40.61$) and control ($M = 112.20$, $SD = 38.13$) conditions did not differ significantly, $F(1, 100) = 1.86$, $p = .18$, $\eta_p^2 = .02$. Across all narratives, the LIWC dictionary was able to classify 77.06% of words ($SD = 6.40$), a typical ratio in studies using LIWC (for an overview, see Pennebaker & Graybeal, 2001). We focused on the proportion of words that fell into the optimism category. This category comprises 70 words expressing optimism (e.g., hope, optimistic, determined). We arrived at the proportion of optimism expressions by dividing the number of such words by the total word count for a given narrative.

Following the event description, participants completed the Positive and Negative Affect Schedule questionnaire (PANAS; Watson, Clark, & Tellegen, 1988). All items were preceded by the stem “Thinking about this event makes me feel.” The PA measure comprised 10 items (1 = *not at all*; 5 = *extremely*): “...interested,” “...excited,” “...strong,” “...enthusiastic,” “...attentive,” “...active,” “...proud,” “...alert,” “...inspired,” “...determined” ($\alpha = .92$, $M = 2.72$, $SD = 0.77$). The NA measure consisted of 10 items: “...scared,” “...irritable,” “...ashamed,” “...nervous,” “...distressed,” “...upset,” “...guilty,” “...hostile,” “...jittery,” “...afraid” ($\alpha = .90$, $M = 1.31$, $SD = 0.48$).

Results and Discussion

Manipulation check. As intended, participants in the nostalgia condition ($M = 4.79$, $SD = 1.04$) reported feeling more nostalgic than those in the control condition ($M = 2.98$, $SD = 1.29$), $F(1, 100) = 61.25$, $p = .001$, $\eta_p^2 = .38$.

PANAS ratings. Participants in the nostalgia condition ($M = 2.85$, $SD = 0.74$) reported marginally more PA than those in the control condition ($M = 2.58$, $SD = 0.79$), $F(1, 100) = 3.30$, $p = .07$, $\eta_p^2 = .032$. Participants in the nostalgia condition ($M = 1.306$, $SD = 0.48$) did not report more NA than those in the control condition ($M = 1.308$, $SD = 0.49$), $F(1, 100) = 0.001$, $p = .98$, $\eta_p^2 < .001$. It is noteworthy that, even in the control condition, PA ($M = 2.58$)

exceeded NA ($M = 1.31$) by a considerable margin, $F(1, 48) = 78.92, p < .001, \eta_p^2 = .62$. It is clearly not the case that nostalgic narratives included more optimism expressions merely because participants in the control condition recalled tedious or negative events. This reinforces prior evidence that the control condition provides an adequate and substantive baseline for assessing the effects of nostalgia (Hepper, Ritchie, et al., 2012; Routledge et al., 2008, 2011, 2012; Stephan et al., 2012; Wildschut et al., 2006, 2010; Vess et al., 2012; Zhou et al., 2008; Zhou, Wildschut, Sedikides, Chen, et al., 2012; Zhou, Wildschut, Sedikides, Shi, et al., 2012).

Optimism. Nostalgic narratives ($M = 0.61\%$, $SD = .78$) contained a significantly higher proportion of optimism expressions than ordinary autobiographical narratives ($M = 0.28\%$, $SD = .48$), $F(1, 100) = 6.57, p = .012, \eta_p^2 = .06$. The results are consistent with the possibility that the experience of nostalgia entails optimism.

Mediational analyses. We tested whether PA mediated the higher frequency of optimism expressions in nostalgic (compared to ordinary) narratives. We used a bootstrapping analysis (Hayes, 2012; model 4; 10,000 resamples) to test the indirect effect of nostalgic (vs. ordinary) recollection on optimism expressions via PA. When PA was included as a mediator, the direct effect of nostalgic (vs. ordinary) recollection on optimism expressions remained significant, $M_{direct\ effect} = .17, SE = .066, t(99) = 2.518, p = .013$. The indirect effect via PA was not significant, $M_{indirect\ effect} = -.001, SE = .014, 95\% CI = -.031 / .027$. Overall, the more frequent occurrence of optimism expressions in nostalgic (vs. ordinary) narratives was independent of affective positivity induced by event recollection.

Study 2

The key objective of Study 2 was to corroborate and extend the Study 1 findings by gauging the impact of nostalgia on optimism. We experimentally induced nostalgia and assessed optimism. We additionally tested PA as a mechanism through which nostalgia may increase optimism. We hypothesized that nostalgic engagement would elicit higher optimism compared to engagement in ordinary autobiographical recollection, above and beyond PA.

Method

Participants. One hundred twenty seven University of Missouri—Columbia undergraduates (65 men, 62 women) took part for course credit. Their ages ranged from 17-41 years ($M = 18.95$, $SD = 2.16$). We randomly assigned participants to the nostalgia and control conditions. We omitted gender from the reported results, as preliminary analyses indicated that this variable did not qualify the findings. Degrees of freedom vary slightly due to missing values.

Procedure and materials. The nostalgia manipulation and manipulation check ($\alpha = .91$, $M = 3.55$, $SD = 1.38$) were identical to those of Study 1. Following the manipulation check, participants completed measures of PA and optimism (1 = *strongly disagree*; 5 = *strongly agree*), all preceded by the stem “Thinking about this event makes me feel.” The PA measure, which we constructed for the purposes of this study (cf. Martin, Abend, Sedikides, & Green, 1997), comprised four items: “... puts me in a great mood,” “... makes me feel good,” “... gives me positive feelings,” and “... makes me feel great” ($\alpha = .97$, $M = 3.72$, $SD = 1.16$). Likewise, the optimism measure, which we also constructed for the objectives of this study, consisted of four items: “... makes me feel ready to take on new challenges,” “... makes me feel optimistic about my future,” “... makes me feel like the sky is the limit,” and “... gives me a feeling of hope about my future” ($\alpha = .90$, $M = 3.45$, $SD = 0.94$).

Results and Discussion

Manipulation check. As intended, participants in the nostalgia condition ($M = 4.02$, $SD = 1.29$) reported feeling more nostalgic than those in the control condition ($M = 3.08$, $SD = 1.31$), $F(1, 122) = 16.12$, $p < .001$, $\eta_p^2 = .12$.

PA. Participants in the nostalgia condition ($M = 3.93$, $SD = 1.10$) reported more PA than those in the control condition ($M = 3.51$, $SD = 1.20$), $F(1, 124) = 4.13$, $p = .044$, $\eta_p^2 = .032$.

Optimism. As hypothesized, nostalgic participants ($M = 3.67$, $SD = 0.88$) expressed more optimism than control participants ($M = 3.24$, $SD = 0.96$), $F(1, 124) = 6.82$, $p = .010$, $\eta_p^2 = .052$.

Mediational analyses. Participants in the nostalgia condition reported more PA than those in the control condition. Thus, PA qualifies as a potential mediator of nostalgia’s effect

on optimism. We used a bootstrapping analysis (Hayes, 2012; model 4; 10,000 resamples) to test the direct effect of nostalgia on optimism, and the indirect effect of nostalgia via PA. The direct effect was significant: $M_{direct\ effect} = .319$, $SE = .158$, $t(123) = 2.014$, $p = .046$. The indirect effect was also significant: $M_{indirect\ effect} = .110$, $SE = .071$, 95% CI = .010 / .294. Thus, nostalgia boosted optimism directly, and also indirectly via increased PA. Such evidence extends prior findings that have begun to establish unique effects of nostalgia above and beyond PA (Routledge et al., 2011; Stephan et al., 2012; Turner, Wildschut, & Sedikides, 2012; Zhou, Wildschut, Sedikides, Shi, et al., 2012).

Study 3

To begin establishing convergent validity, we implemented in Study 3 an alternative manipulation that capitalizes on music's capacity to evoke nostalgia (Barrett et al., 2010; C. M. Hart et al., 2011; Routledge et al., 2011). Specifically, we induced nostalgia by presenting participants with a nomothetically-relevant nostalgic song. We hypothesized that listening to a nostalgic (compared to a control) song would elevate optimism. Further, we relied on a relatively large sample to examine the generality of this effect across gender and age. More important, we tested the mediational role of self-esteem while also taking into account the potential role of PA.

Method

Six hundred and sixty four volunteers (345 women, 319 men) completed the study materials online after visiting 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 another website with study materials. Data collection was completed in December 2011 and January 2012. Participant age ranged from 14-67 years ($M = 36.58$, $SD = 13.18$). Nine percent of participants were aged 14-19 years; 29% were aged 20-29; 17% were aged 30-39; 22% were aged 40-49; 20% were aged 50-59; and 2% were aged 60 and over. Also, 97% of participants identified The Netherlands as their country of birth.

We randomly assigned participants to listen either to a nostalgic or control song. We presented songs via a media player in participants' Internet browser. The Dutch artist Wim

Sonneveld performed the songs. The nostalgic song was titled “Het Dorp [The Village]” (released 1974), and the control song was titled “Nikkelen Nelis [Nickeled Nelis]” (released 1965). In a pretest (December 2010 to January 2011), 519 (284 women, 235 men) “Top 2000” listeners rated (1 = *not at all*, 6 = *very much*) the extent to which these songs produced nostalgia (“nostalgia” and “longing for the past”) and PA (“happiness” and “positive mood”). Pretest participants listened to both songs in counterbalanced order. As intended, the nostalgic song ($M = 4.27$, $SD = 1.48$) produced more nostalgia than the control song ($M = 3.05$, $SD = 1.54$), $F(1, 518) = 380.90$, $p < .001$. Also, the nostalgic song ($M = 3.15$, $SD = 1.36$) did not produce more PA than the control song ($M = 3.06$, $SD = 1.29$), $F(1, 518) = 2.09$, $p = .15$.

Assessment of variables. Due to strict space limitations on the survey, we assessed all variables with brief, two-item measures (1 = *not at all*, 5 = *very much*).

Manipulation check. Participants rated the extent to which listening to the assigned song induced nostalgia (“nostalgia,” “longing for the past;” $r[664] = .67$, $M = 3.03$, $SD = 1.29$).

PA. Participants rated the extent to which listening to the assigned song induced PA (“happy,” “positive mood;” $r[664] = .76$, $M = 2.79$, $SD = 1.06$).

Self-esteem. Participants rated the extent to which listening to the assigned song induced self-esteem (“feel good about myself,” “satisfied with myself;” $r[664] = .90$, $M = 2.69$, $SD = 1.11$).

Optimism. Finally, participants rated the extent to which listening to the assigned song induced optimism (“optimistic about the future,” “hopeful about the future;” $r[664] = .91$, $M = 2.71$, $SD = 1.19$).

Results and Discussion

Manipulation check. As intended, participants who listened to the nostalgic song ($M = 3.44$, $SD = 1.26$) reported higher levels of nostalgia than those who listened to the control song ($M = 2.58$, $SD = 1.17$), $F(1, 662) = 81.14$, $p < .001$, $\eta_p^2 = .109$.

PA. In replication of the abovementioned pilot study, participants who listened to the nostalgic song ($M = 2.86$, $SD = 1.05$) did not report more PA than those who listened to the control song ($M = 2.72$, $SD = 1.07$), $F(1, 662) = 2.87$, $p = .091$, $\eta_p^2 = .004$.

Self-esteem. Replicating past findings (Hepper, Ritchie, et al., 2012; Wildschut et al., 2006), participants in the nostalgia condition ($M = 2.79$, $SD = 1.07$) reported higher self-esteem than those in the control condition ($M = 2.58$, $SD = 1.16$), $F(1, 662) = 5.77$, $p = .02$, $\eta_p^2 = .009$.

Optimism. As hypothesized, participants who listened to the nostalgic song reported higher optimism ($M = 2.92$, $SD = 1.15$) than those who listened to the control song ($M = 2.48$, $SD = 1.20$), $F(1, 662) = 23.69$, $p < .001$, $\eta_p^2 = .035$.

Generality of nostalgia's effect on optimism. The balanced gender composition and wide age range within our sample enabled a strong test of the generality of nostalgia's effect on optimism. We conducted a Nostalgia $\times$ Gender $\times$ Age ANCOVA, with age treated as a continuous predictor (i.e., covariate, Tabachnick & Fidell, 2007) and with optimism as the dependent variable. We centered participant age prior to the analyses. We present results in Table 1. The nostalgia and age main effects were significant, indicating that optimism was higher among participants who listened to the nostalgic (compared to the control) song and who were older (compared to younger; $B_{\text{age, optimism}} = .012$, $SE = .003$). The Nostalgia $\times$ Age interaction was not significant, suggesting that the effect of nostalgia on optimism was independent of age. The Nostalgia $\times$ Gender interaction was significant. Tests of simple effects showed that, for men, there was a large and statistically significant nostalgia effect, $F(1, 656) = 22.85$, $p < .001$, $\eta_p^2 = .03$; for women, the nostalgia effect was smaller but also statistically significant, $F(1, 656) = 4.43$, $p = .036$, $\eta_p^2 = .01$. To conclude, the effect of nostalgia on optimism generalized across age and gender.

Mediational analyses. Self-esteem qualified as a potential mediator of nostalgia's effect on optimism, but PA did not. Regardless, and for data-analytic continuity purposes, we included both self-esteem and PA as parallel mediators in a bootstrapping analysis (Hayes, 2012; model 4; 10,000 resamples). The direct effect of nostalgia on optimism was significant, $M_{\text{direct effect}} = .14$, $SE = .03$, $t(660) = 4.596$, $p < .001$. The indirect effect of nostalgia on

optimism via self-esteem was also significant, $M_{indirect\ effect} = .06$, $SE = .03$, 95% CI = .01 / .12. However, and as expected, the indirect effect of nostalgia on optimism via PA was not significant, $M_{indirect\ effect} = .02$, $SE = .01$, 95% CI = -.002 / .04. Nostalgia boosted optimism both directly, and also indirectly via increased self-esteem, but not via PA.

Study 4

To further establish convergent validity, we implemented in Study 4 an additional music-based, idiographic manipulation of nostalgia (Routledge et al., 2011). We induced nostalgia by presenting participants with lyrics to songs that they had previously identified as nostalgic (compared with control lyrics). We hypothesized that reading nostalgic (compared to control) song lyrics would raise optimism. In addition, we examined the role of both social connectedness and self-esteem. Does nostalgia exert an indirect effect on optimism via social connectedness and self-esteem? Specifically, does nostalgia imbue individuals with a sense of social connectedness, which in turn lifts self-esteem? We tested whether this sequential path constitutes a basis for nostalgia's effect on optimism. We hypothesized that the indirect effect of social connectedness and self-esteem would explain the rise in optimism, above and beyond PA.

Method

Participants. Participants were 127 University of Southampton undergraduates fulfilling a course requirement. Due to technical problems, we were able to record gender and age only for 84 individuals (69 women, 15 men). For this group, participant age ranged from 18-42 years ($M = 19.38$, $SD = 3.42$). Among participants with identifiable gender information, the results were not qualified by gender, and so we omitted this variable from subsequent analyses.

Procedure and materials. The study involved a preliminary and an experimental session separated by three weeks. In the preliminary session, participants received a dictionary definition of nostalgia ("A sentimental longing or wistful affection for the past;" *The New Oxford Dictionary of English*, 1998, p.1266) and then listed the titles and performing artists of three songs that made them feel nostalgic. Prior to the experimental session, we randomly allocated participants to conditions. For participants in the nostalgia

condition, we retrieved the lyrics of a song that they listed as nostalgic. We yoked participants in the control condition to a participant in the nostalgia condition and designated them to receive the same lyrics as that person. (We ascertained that the relevant song was not one that the control participant also considered nostalgic.) In this way, we were able to use the same set of lyrics in the nostalgia and control conditions, and thus hold constant the content of the lyrics in both conditions (Routledge et al., 2011). During the experimental session, participants read the prepared lyrics (nostalgic or control) and then completed the manipulation check and measures.

Manipulation check. The manipulation check was identical to that of Studies 1-2 (1 = *strongly disagree*, 6 = *strongly agree*; $\alpha = .98$, $M = 3.74$, $SD = 1.47$).

PA. We assessed PA with two items. Participants rated the extent to which reading the lyrics made them feel: “happy” and “in a good mood” (1 = *strongly disagree*, 6 = *strongly agree*; $r[127] = .90$, $M = 3.99$, $SD = 1.32$).

Self-esteem. We assessed self-esteem with four items (Hepper, Ritchie, et al., 2012; Wildschut et al., 2006). Participants rated the extent to which reading the lyrics made them feel: “good about myself,” “I like myself better,” “I like myself more,” and “I have many positive qualities” (1 = *strongly disagree*, 6 = *strongly agree*; $\alpha = .90$, $M = 3.28$, $SD = 1.09$).

Social connectedness. We assessed social connectedness with four items (Hepper, Ritchie, et al., 2012; Wildschut et al., 2006). Participants rated the extent to which reading the lyrics made them feel: “connected to loved ones,” “protected,” “loved,” and “trust others” (1 = *strongly disagree*, 6 = *strongly agree*; $\alpha = .91$, $M = 3.58$, $SD = 1.28$).

Optimism. We assessed optimism with the Revised Life Orientation Test (LOT-R; Scheier et al., 1994). The LOT-R comprises six items (plus four fillers) that assess optimism in terms of having positive, and not negative, expectancies for the future (e.g., “In uncertain times, I usually expect the best,” “If something can go wrong for me, it will” [reverse-scored]; 1 = *strongly disagree*, 5 = *strongly agree*; $\alpha = .85$, $M = 3.39$, $SD = .81$).

Results and Discussion

Manipulation check. As intended, participants who read personally nostalgic lyrics ($M = 4.55$, $SD = 0.93$) reported feeling more nostalgic than those who read control lyrics ($M = 2.86$, $SD = 1.45$), $F(1, 125) = 61.45$, $p < .001$, $\eta_p^2 = .33$.

PA. Participants who read personally nostalgic lyrics ($M = 4.44$, $SD = 1.22$) reported higher levels of PA than those who read control lyrics ($M = 3.51$, $SD = 1.27$), $F(1, 125) = 17.76$, $p < .001$, $\eta_p^2 = .12$.

Social connectedness. Participants who read personally nostalgic lyrics ($M = 4.07$, $SD = 1.16$) reported higher levels of social connectedness than those who read control lyrics ($M = 3.04$, $SD = 1.20$), $F(1, 125) = 24.28$, $p < .001$, $\eta_p^2 = .16$.

Self-esteem. Participants who read personally nostalgic lyrics ($M = 3.64$, $SD = 1.07$) reported higher levels of self-esteem than those who read control lyrics ($M = 2.89$, $SD = 0.98$), $F(1, 125) = 16.61$, $p < .001$, $\eta_p^2 = .12$.

Optimism. Consistent with the hypothesis, participants who read personally nostalgic lyrics ($M = 3.55$, $SD = 0.88$) reported higher levels of optimism than those who read control lyrics ($M = 3.21$, $SD = 0.70$), $F(1, 125) = 5.67$, $p = .02$, $\eta_p^2 = .04$.

Mediational analyses. We carried out the analyses using AMOS within SPSS for Windows. We calculated bias-corrected 95% bootstrap confidence intervals (CIs) and bootstrap standard errors for direct and indirect effects (10,000 bootstrap samples). We present tests of direct and indirect effects in Table 2. All but two direct effects (i.e., paths in Figure 1) were significant. Nostalgia increased social connectedness (path a) and self-esteem (above and beyond social connectedness; path b), but it did not directly increase optimism (above and beyond social connectedness and self-esteem; path c). Social connectedness predicted increased self-esteem (above and beyond nostalgia; path d), but it did not directly predict increased optimism (above and beyond nostalgia and self-esteem; path e). Finally, self-esteem predicted increased optimism (above and beyond nostalgia and social connectedness; path f).

In addition to these direct effects, all but one indirect effects in Figure 1 were significant. Consistent with the possibility that nostalgia-induced social connectedness constitutes a basis for self-esteem, the link between nostalgia and self-esteem was mediated

by social connectedness (path $a * \text{path } d$). Regarding the link between nostalgia and optimism, there was a significant total indirect effect of nostalgia on optimism via social connectedness and self-esteem. We partitioned this total indirect effect into a non-significant indirect effect via social connectedness ($a * e$) and a significant indirect effect via self-esteem. In turn, we partitioned the indirect effect via self-esteem into a significant indirect effect that was independent of social connectedness ($b * f$) and a significant indirect effect that was mediated by social connectedness ($a * d * f$). The latter indirect effect ($a * d * f$) provides evidence for an extended causal sequence leading from nostalgia to social connectedness to self-esteem to optimism.

Model fit and alternative models. To assess model fit, we trimmed the non-significant direct path from nostalgia to optimism and then calculated fit indices for the resultant non-saturated model (Figure 1, minus path c). This model provided good fit: $\chi^2(1, N = 127) = 1.51, p = .22, \text{SRMSR} = .03, \text{RMSEA} = .06, \text{CFI} = .99$. We also tested alternative models, exploring (a) the position of optimism in the postulated causal sequence and (b) the order of social connectedness and self-esteem (i.e., the postulated mediators). We first explored the position of optimism. Given that nostalgia was manipulated, optimism cannot precede nostalgia. However, optimism can precede social connectedness and/or self-esteem. Hence, we tested an alternative model in which optimism preceded social connectedness and self-esteem. This model was analogous to the original model (Figure 1, minus path c) but with optimism in the place of social connectedness, social connectedness in the place of self-esteem, and self-esteem in the place of optimism. This model provided marginal fit (most fit indices were adequate but RMSEA exceeded the .10 threshold that is often used as a cut-off for poor fitting models): $\chi^2(1, N = 127) = 2.44, p = .12, \text{SRMSR} = .03, \text{RMSEA} = .11, \text{CFI} = .98$. Within a set of models for the same data, the Akaike Information Criterion (AIC; Akaike, 1974) can be used to compare competing models that need not be nested (smaller is better). For the alternative model, $\text{AIC} = 28.44$. By comparison, for the original model, $\text{AIC} = 27.51$. The fit statistics for this first alternative model are identical to those for a second alternative model, in which optimism follows social connectedness but precedes self-esteem. The reason for this is that the two alternative models differ only in the direction of the link

between social connectedness and optimism, but are otherwise identical. Any two models that have the same paths between the same variables will have the same fit, even if some paths are in a different direction. In all, these results indicate that the original model is preferable to alternative models in which optimism precedes social connectedness and/or self-esteem.

Next, we tested a third alternative model, in which the order of social connectedness and self-esteem (i.e., the mediators) was reversed. This third alternative model differs from the original model (Figure 1, minus path c) only in the direction of the link between social connectedness and self-esteem. Accordingly, the models have identical fit. However, in this alternative model, social connectedness (the proximal predictor of optimism) did not predict optimism above and beyond nostalgia and self-esteem. We therefore retained the original model, in which social connectedness precedes self-esteem.

Testing the mediational role of PA. Finally, we again explored the possible mediational role of PA. Specifically, we tested the Figure 1 model with PA as an additional mediator (Figure 1, plus a path from nostalgia to optimism via PA). This analysis revealed that the indirect effect of nostalgia on optimism via PA was not significant, $M_{\text{indirect effect}} = -.029$, $SE = .036$, $95\%CI = -.110 / .036$. Furthermore, the vital extended path from nostalgia to optimism via social connectedness and self-esteem ($a * d * f$) remained significant, $M_{\text{indirect effect}} = .058$, $SE = .025$, $95\%CI = .023 / .123$. In all, we obtained support for a model in which the effect of nostalgia is mediated by social connectedness and concomitant self-esteem, above and beyond PA.

General Discussion

Nostalgia's referent is the past, but its psychological scope may extend into the future. This is an important issue, given the prevalence of nostalgic reverie and the potent influence of optimism on psychological well-being. Prior work, for example, reveals that nostalgia is experienced across cultures (Hepper, Wildschut, Sedikides, et al., 2013) and approximately three times a week (Wildschut et al., 2006). Yet prior research has not considered the future orientation of nostalgia, and, more specifically, the relation between nostalgia and optimism. Are there any indications that nostalgic accounts contain traces of optimism? Does nostalgic reverie engender optimism? If so, how?

Summary and Implications of the Findings

An initial foray into these issues, Study 1, demonstrated that nostalgic (compared to ordinary autobiographical) narratives do entail optimism, and, in particular, optimism expressions. Notably, expressions of optimism in the nostalgic narratives occurred above and beyond ratings of positive affect. Whereas the strength of Study 1 allowed a naturalistic glimpse into displays of optimism in nostalgia writings, this feature also constitutes the study's chief weakness. The study may have contributed a foundational step in understanding the relation between nostalgia and optimism, but it does not permit causal inferences about nostalgia's capacity to elicit optimism. Therefore, the next three studies adopted multiple converging experimental inductions of nostalgia and assessed their effects on optimism.

Study 2 offered evidence of a causal link by illustrating that experimentally-induced nostalgia augments optimism. Study 2 also measured positive affect and found that the nostalgia-induced augmentation of optimism occurred above and beyond positive affect. This finding helps to address concerns that it may simply be positive mood stemming from nostalgic (vs. ordinary) events that drives the effect of nostalgia on optimism. Such concerns were also allayed by Studies 3 and 4.

Study 3 replicated the Study 2 findings using exposure to nomothetically-relevant nostalgic versus control songs, a validated technique (Sedikides et al., 2013). Moreover, Study 3 illustrated the mediational role of self-esteem: nostalgia raises self-esteem, which in turn heightens optimism. Such findings build on prior work showing that memories of one's past can help to maintain current feelings of self-worth (Peetz & Wilson, 2008; Wilson & Ross, 2003), but extend these insights to demonstrate that the current feelings of self-worth that nostalgia elicits can then contribute to a brighter forecast of the future. In all, Study 3 showcased a distinct pathway through which the past bolsters the present, which then brightens the future.

Study 4 helped to clarify further these processes using exposure to idiographically nostalgic (vs. control) music lyrics, also a validated technique (Routledge et al., 2011). This study established an extended causal sequence that affirmed the status of social connectedness as a basis for self-esteem. Nostalgia fostered social connectedness, which

subsequently lifted self-esteem, which then heightened optimism. Put otherwise, the self-esteem lift that participants experienced stemmed from an enhanced sense of social connectedness that was derived from nostalgic reverie; this self-esteem lift, in turns, raised optimism.

Limitations and Broader Considerations

As mentioned above, every nostalgia induction technique we used has been validated (Hepper et al., 2012; Routledge et al., 2011; Sedikides et al., 2013; Wildschut et al., 2006). Nevertheless, taken alone, the techniques have their weaknesses and may invite alternative interpretation of the findings. For example, in Studies 1 and 2, the nostalgic and ordinary autobiographical narratives may differ beyond the nostalgic qualities we targeted, and may be confounded by other content-specific elements of the narratives. Similar issues may apply to the nostalgic and control songs in Study 3. Such possible confounds, however, are countered by our convergent operations approach (Campbell & Fiske, 1959). This multi-method approach yielded consistent evidence that nostalgia entails and engenders optimism. Finally, in all four studies, nostalgia increased optimism above and beyond positive affect. Such evidence extends prior research that has begun to establish unique effects of nostalgia, independent of positive affect (Routledge et al., 2012; Stephan et al., 2012; Turner et al., 2012; Turner, Wildschut, Sedikides, & Gheorghiu, in press; Zhou, Wildschut, Sedikides, Chen et al., 2012; Zhou, Wildschut, Sedikides, Shi et al., 2012).

Given our focus on global optimism, one might wonder whether the findings generalize to specific domains. We anticipate that nostalgia will also infuse optimism on concrete behavioral domains. To begin with, global optimism is a good proxy of specific, optimism-related behavior (Anderson & Galinsky, 2006). Moreover, nostalgic reverie strengthens intentions to donate time or money to charity (Merchant, Ford, & Rose, 2011; Zhou, Wildschut, Sedikides, Shi, et al., 2012), promotes tangible monetary donations (Zhou, Wildschut, Sedikides, Shi, et al., 2012), and solidifies the proclivity to interact with members of an outgroup (Turner et al., 2012, in press). Regardless, future studies would do well to examine whether nostalgia prompts optimism in specific domains and also whether it propels relevant action.

Nostalgia boosts a sense of attachment security and perceptions of one's interpersonal competence (Wildschut et al., 2006, 2010), while relational competence increases optimism for relationships (Carnelley & Janoff-Bulman, 1992). As such, nostalgic engagement—through optimism—might contribute to supportive and commitment-focused behaviors in close relationships (Hepper, Wildschut, & Sedikides, 2012). Given that social connectedness was the mechanism by which nostalgia raised self-esteem and thereby optimism, the inherent sociality of nostalgia might also explain optimism and goal-directed behavior in other domains. That is, nostalgia might act as a source of felt security, which, according to attachment theory, allows individuals to form positive expectations, explore their environment confidently and energetically, and approach novel experiences (Carnelley & Ruscher, 2000; Luke, Sedikides, & Carnelley, 2012).

Optimism confers well-being and health benefits (Carver et al., 2010; K. E. Hart & Hittner, 1995). Nostalgia, then, may be one route toward well-being, motivating healthy behaviors and even relationship success. Furthermore, given evidence that nostalgic memories are often recruited in times of loneliness, sadness, boredom, or existential doubt (Routledge et al., 2008; van Tilburg, Igou, & Sedikides, in press; Wildschut et al., 2006; Zhou et al., 2008), our findings imply that nostalgia, by promoting optimism, could help individuals cope with psychological adversity in a more engaged, less avoidant, and ultimately healthier manner.

Nostalgia can be used, not only to infuse, but also to maintain, optimism. Individuals may be optimistic in the initial stages of task involvement, but they typically become less optimistic as the point of feedback pertaining to task outcomes draws nearer (Sweeny & Krizan, in press). Nostalgia may counter these temporal declines in optimism and renew the strength of goal pursuit. By so doing, nostalgia could facilitate improvement, if not success (Sedikides & Hepper, 2009), at least in cases where pessimism is unwarranted or maladaptive. Of course, for certain individuals, nostalgia may have undesirable consequences, and this is a pressing topic for future research. Depressed persons, for example, may nostalgically reflect on their past in a way that disconnects it from present or future prospects, and they may even use such reflection to justify a pessimistic outlook (Iyer & Jetten, 2011; Verplanken, 2012).

Yet, given the nature and consistency of the present findings, any such exceptions are overshadowed by nostalgia's capacity to facilitate perceptions of a more positive future.

Finally, our findings offer another example of connectivity between temporal projections. They suggest that the common neural network involved in past and future representations (Brown et al., 2012; Viard et al., 2011) is applied to representations of the self and self-relevant events. Nostalgia may constitute a catalyst for linking one's personal past, present, and future, thus providing a sense of self-continuity (Sedikides et al., 2008, 2013).

Coda

The current research established that nostalgia promotes optimism. This pattern held regardless of the way in which nostalgia was induced, for both women and men, across age groups, and in three cultures (American, English, Dutch). The optimistic flame ignited by nostalgia is fuelled by increases in self-esteem, which is founded on social connectedness. Nostalgia is not just an old, sepia-toned photo, locked in a box. Its power is far-reaching and can brighten up the path ahead.

References

- Addis, D. R., Sacchetti, D. C., Ally, B. A., Budson, A. E., & Schacter, D. L. (2009). Episodic simulation of future events is impaired in mild Alzheimer's disease. *Neuropsychologia*, 47. doi: 10.1016/j.neuropsychologia.2009.05.018
- Albarracin, D., & Wyer, R. S. (2000). The cognitive impact on past behavior: Influences on beliefs, attitudes and future behavioral decisions. *Journal of Personality and Social Psychology*, 79, 5-22. doi: 10.1037/0022-3514.79.1.5
- Anderson, C., & Galinsky, A. D. (2006). Power, optimism, and risk-taking. *European Journal of Social Psychology*, 36, 511-536. doi: 10.1002/ejsp.324
- Andersson, G. (1996). The benefits of optimism: a meta-analytic review of the Life Orientation Test. *Personality and Individual Differences*, 21, 719-725. doi: 10.1016/0191-8869(96)00118-3
- 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. doi: 10.1037/a0019006
- Brissette, I., Scheier, M. F., & Carver, C. S. (2002). The role of optimism in social network development, coping, and psychological adjustment during a life transition. *Journal of Personality and Social Psychology*, 82, 102-111. doi: 10.1037//0022-3514.82.1.102
- Brown, A. D., Dorfman, M. L., Marmar, C. R., & Bryant, R. A. (2012). The impact of perceived self-efficacy on mental time travel and social problem solving. *Consciousness and Cognition*, 21, 299-306. doi: 10.1016/j.concog.2011.09.023
- Buckner, R. L., & Carroll, D. C. (2007). Self-projection and the brain. *Trends in Cognitive Science*, 11, 49-57. doi: 10.1016/j.tics.2006.11.004
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56, 81-105.
- Carnelley, K. B., & Janoff-Bulman, R. (1992). Optimism about love relationships: General vs specific lessons from one's personal experiences. *Journal of Social and Personal Relationships*, 9, 5-20. doi: 10.1177/0265407592091001

- Carnelley, K. B., & Ruscher, J. B. (2000). Adult attachment and exploratory behavior in leisure. *Journal of Social Behavior and Personality, 15*, 153-165.
- Carver, C., Scheier, M. F., & Segerstrom, S. (2010). Optimism. *Clinical Psychology Review, 30*, 879-889. doi: 10.1016/j.cpr.2010.01.006
- Castelnuovo-Tedesco, P. (1980). Reminiscence and nostalgia: The pleasure and pain of remembering. In S. I. Greenspan & G. H. Pollack (Eds.), *The course of life: Psychoanalytic contributions toward understanding personality development* (Vol. III: Adulthood and the aging process, pp. 104-118). Washington, DC: U.S: Government Printing Office.
- Chemers, M. M., Watson, C. B., & May, S. T. (2000). Dispositional affect and leadership effectiveness: A comparison of self-esteem, optimism, and efficacy. *Personality and Social Psychology Bulletin, 26*, 267-277. doi: 10.1177/0146167200265001
- Crocker, J., & Wolfe, C. T. (2001). Contingencies of self-worth. *Psychological Review, 108*, 593-623. doi: 10.1037//0033-295X.108.3.593
- Davis, F. (1977). Nostalgia, identity, and the current nostalgia wave. *Journal of Popular Culture, 11*, 414-425. doi: 10.1111/j.0022-3840.1977.00414.x
- Davis, F. (1979). *Yearning for yesterday: A sociology of nostalgia*. New York, NY: Free Press.
- Ek, E., Remes, J., & Sovio, U. (2004). Social and Developmental Predictors of Optimism from Infancy to Early Adulthood. *Social Indicators Research, 69*, 219-242. doi: 10.1023/B:SOCI.0000033591.80716.07
- Fontaine, K. R., & Jones, L. C. (1997). Self-esteem, optimism, and postpartum depression. *Journal of Clinical Psychology, 53*, 59-63. doi: 10.1002/(SICI)1097-4679(199701)53:1<59::AID-JCLP8>3.3.CO;2-C
- Gillham, J., & Reivich, K. (2004). Cultivating optimism in childhood and adolescence. *The ANNALS of the American Academy of Political and Social Science, 591*, 146-163. doi: 10.1177/0002716203260095

- Hart, C. M., Sedikides, C., Wildschut, T., Arndt, J., Routledge, C., & Vingerhoets, A. J. J. M. (2011). Nostalgic recollections of high and low narcissists. *Journal of Research in Personality, 45*, 238-242. doi: 10.1016/j.jrp.2011.01.002
- Hart, K. E., & Hittner, J. B. (1995). Optimism and pessimism: Associations to coping and anger-reactivity. *Personality and Individual Differences, 19*, 827-839. doi: 10.1016/S0191-8869(95)00104-2
- Hassabis, D., Kumaran, D., Vann, S. D., & Maguire, E. A. (2007). Patients with hippocampal amnesia cannot imagine new experiences. *Proceedings of the National Academy of Sciences of the United States of America, 104*, 1726-1731. doi: 10.1073/pnas.0610561104
- Hassabis, D., & Maguire, E. A. (2007). Deconstructing episodic memory with construction. *Trends in Cognitive Science, 11*, 299–306. doi: 10.1016/j.tics.2007.05.001
- Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. <http://www.afhayes.com/public/process2012.pdf>
- Heinonen, K., Räikkönen, K., & Keltikangas-Järvinen, L. (2005). Dispositional optimism: development over 21 years from the perspectives of perceived temperament and mothering. *Personality and Individual Differences, 38*, 425-435. doi: 10.1016/j.paid.2004.04.020
- Hepper, E. G., Ritchie, T. D., Sedikides, C., & Wildschut, T. (2012). Odyssey's end: Lay conceptions of nostalgia reflect its original Homeric meaning. *Emotion, 12*, 102-119. doi: 10.1037/a0025167
- Hepper, E. G., Wildschut, T., & Sedikides, C. (2012). *Down memory lane together: Nostalgic interactions in close relationships*. Paper presented at the Poster presented at International Association of Relationship Research Conference, Chicago, IL.
- Hepper, E. G., Wildschut, T., Sedikides, C., Ritchie, T. D., Yung, Y.-F., Hansen, N., ... Zhou, X. (2013). *Pancultural Nostalgia: Prototypical Conceptions across Cultures*. Unpublished manuscript, University of Surrey

- Hofer, J. (1688/1934). Medical dissertation on nostalgia. (C. K. Anspach, Trans.). *Bulletin of the History of Medicine*, 2, 376-391.
- Holak, S. L., & Havlena, W. J. (1992). Nostalgia: An exploratory study of themes and emotions in the nostalgic experience. *Advances in Consumer Research*, 19, 380-386.
- Holak, S. L., & Havlena, W. J. (1998). Feelings, fantasies, and memories: An examination of the emotional components of nostalgia. *Journal of Business Research*, 42, 217-226. doi: 10.1016/S0148-2963(97)00119-7
- Isaacowitz, D. M. (2005). Correlates of well-being in adulthood and old age: A tale of two optimisms. *Journal of Research in Personality*, 39, 224-244. doi: 10.1016/j.jrp.2004.02.003
- Iyer, A., & Jetten, J. (2011). What's left behind: Identity continuity moderates the effect of nostalgia on well-being and life choices. *Journal of Personality and Social Psychology*, 101, 94-108. doi: 10.1037/a0022496
- Johnson, M. R., & Sherman, S. J. (1990). Constructing and reconstructing the past and future in the present. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of Motivation and Cognition: Foundations of Social Behavior* (Vol. 2, pp. 482-526). New York: The Guilford Press.
- Klein, S. B., Loftus, J., & Kihlstrom, J. (2002). Memory and temporal experience. The effects of episodic memory loss on an amnesic patient's ability to remember the past and imagine the future. *Social Cognition*, 20, 353-379. doi: 10.1521/soco.20.5.353.21125
- Klein, S. B., Robertson, T. E., & Delton, A. W. (2010). Facing the future: Memory as an evolved system for planning future acts. *Memory and Cognition*, 38, 13-22. doi: 10.3758/MC.38.1.13
- Kleiner, J. (1977). On nostalgia. In C. W. Socarides (Ed.), *The world of emotions* (pp. 471-498). New York, NY: International University Press.
- Leary, M. R. (2005). Sociometer theory and the pursuit of relational value: Getting to the root of self-esteem. *European Review of Social Psychology*, 16, 75-111. doi: 10.1080/104632805400000007

- Luke, M. A., Sedikides, C., & Carnelley, K. B. (2012). Your love lifts me higher! The energizing quality of secure relationships. *Personality and Social Psychology Bulletin*, 38, 721-733. doi: 10.1177/0146167211436117
- MacLeod, A. K., & Conway, C. (2005). Well-being and the anticipation of future positive experiences: The role of income, social networks, and planning ability. *Cognition and Emotion*, 19, 357-374. doi: 10.1080/02699930441000247
- Mäkikangas, A., & Kinnunen, U. (2003). Psychosocial work stressors and well-being: self-esteem and optimism as moderators in a one-year longitudinal sample. *Personality and Individual Differences*, 35, 537-557. doi: 10.1016/S0191-8869(02)00217-9
- Mäkikangas, A., Kinnunen, U., & Feldt, T. (2004). Self-esteem, dispositional optimism, and health: Evidence from cross-lagged data on employees. *Journal of Research in Personality*, 38, 556-575. doi: 10.1016/j.jrp.2004.02.001
- Merchant, A., Ford, J. B., & Rose, G. (2011). How personal nostalgia influences giving to charity. *Journal of Business Research*, 64, 610-616. doi: 10.1016/j.jbusres.2010.06.013
- Mosing, M. A., Zietsch, B. P., Shekar, S. N., Wright, M. J., & Martin, N. G. (2009). Genetic and environmental influences on optimism and its relationship to mental and self-rated health: a study of aging twins. *Behavior Genetics*, 39, 597-604.
- Nawas, M. M., & Platt, J. J. (1965). A future-oriented theory of nostalgia. *Journal of Individual Psychology*, 21, 51-57.
- Peetz, J., & Wilson, A. E. (2008). The temporally extended self: The relation of past and future selves to current identity, motivation, and goal pursuit. *Social and Personality Psychology Compass*, 2, 2090-2106. doi: 10.1111/j.1751-9004.2008.00150.x
- Pennebaker, J. W., Booth, R. J., & Francis, M. E. (2007). *Linguistic Inquiry and Word Count: LIWC*. Austin, TX: LIWC.net.
- Pennebaker, J. W., & Graybeal, A. (2001). Patterns of natural language use: disclosure, personality, and social integration. *Current Directions in Psychological Science*, 10, 90-93. doi: 10.1111/1467-8721.00123

- Pyszczynski, T., Greenberg, J., Solomon, S., Arndt, J., & Schimel, J. (2004). Why do people need self-esteem? A theoretical and empirical review. *Psychological Bulletin*, *130*, 435-468. doi: 10.1037/0033-2909.130.3.435
- 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. doi: 10.1016/j.jesp.2006.11.001
- Routledge, C., Arndt, J., Sedikides, C., Wildschut, T., Hart, C. M., Juhl, J., & Schlotz, W. (2011). The past makes the present meaningful: Nostalgia as an existential resource. *Journal of Personality and Social Psychology*, *101*, 638-652. doi: 10.1037/a0024292
- Routledge, C., Wildschut, T., Sedikides, C., Juhl, J., & Arndt, J. (2012). The power of the past: Nostalgia as a meaning-making resource. *Memory*, *20*, 452-460. doi: 10.1080/09658211.2012.677452
- Rude, S. S., Gortner, E., & Pennebaker, J. W. (2004). Language use of depressed and depression-vulnerable college students. *Cognition and Emotion*, *18*, 1121–1133. doi: 10.1080/02699930441000030
- Saphire-Bernsteina, S., Way, B. M., Kim, H. S., Sherman, D. K., & Taylor, S. E. (2011). Oxytocin receptor gene (OXTR) is related to psychological resources. *Proceedings of the National Academy of Sciences of the United States of America*, *108*, 15118-15122. doi: 10.1073/pnas.1113137108/-/DCSupplemental
- Schacter, D. L., & Addis, D. R. (2007). The cognitive neuroscience of constructive memory: Remembering the past and imagining the future. *Philosophical Transactions of the Royal Society of London B Biological Sciences*, *362*, 773–786. doi: 10.1098/rstb.2007.2087
- Scheier, M. F., & Carver, C. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research*, *16*, 201–228. doi: 10.1007/BF01173489
- Scheier, M. F., & Carver, C. S. (1993). On the power of positive thinking: The benefits of being optimistic. *Current Directions in Psychological Science*, *2*, 26–30. doi: 10.1111/1467-8721.ep10770572

- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67, 1063-1078. doi: 10.1037/0022-3514.67.6.1063
- Scheuchzer, J. J. (1731). De nostalgia. *De Bononiensi Scientiarum et Artium Instituto atque Academia Commentarii*, 1, 307-313.
- Sedikides, C., & Hepper, E. G. D. (2009). Self-improvement. *Social and Personality Psychology Compass*, 3, 899-917.
- Sedikides, C., & Skowronski, J. A. (1997). The symbolic self in evolutionary context. *Personality and Social Psychology Review*, 1, 80-102.
- Sedikides, C., Wildschut, T., Arndt, J., & Routledge, C. (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., Arndt, J., & Routledge, C. (2008). Nostalgia: past, present, and future. *Current Directions in Psychological Science*, 17, 304-307. doi: 10.1111/j.1467-8721.2008.00595.x
- 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.
- Sedikides, C., Wildschut, T., Routledge, C., Arndt, J., Hepper, E. G., Vail, K., ... Vingerhoets, A. J. J. M. (2013). *Nostalgia counters self-discontinuity and fosters self-continuity: Implications for well-being*. Manuscript submitted for publication.
- Segerstrom, S. C. (2007). Optimism and resources: Effects on each other and on health over 10 years. *Journal of Research in Personality*, 41, 772-786. doi: 10.1016/j.jrp.2006.09.004
- Stephan, E., Sedikides, C., & Wildschut, T. (2012). Mental travel into the past: Differentiating recollections of nostalgic, ordinary, and positive events. *European Journal of Social Psychology*, 42, 290-298. doi: 10.1002/ejsp.1865

- Sterba, E. (1940). Homesickness and the mother's breast. *Psychiatric Quarterly*, 14, 701-707. doi: 10.1007/BF01566790
- Suddendorf, T., & Corballis, M. C. (2007). The evolution of foresight: what is mental time travel and is it unique to humans? *Behavioral and Brain Sciences*, 30, 299-313. doi: 10.1017/S0140525X07001975
- Sweeny, K., & Krizan, Z. (in press). Causes and consequences of expectation trajectories: "High" on optimism in a public referendum. *Psychological Science*.
- Symister, P., & Friend, R. (2003). The influence of social support and problematic support on optimism and depression in chronic illness: A prospective study evaluating self-esteem as a mediator. *Health Psychology*, 22, 123-129. doi: 10.1037//0278-6133.22.2.123
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th Ed.). Toronto, Canada: Pearson.
- The New Oxford Dictionary of English*. (1998). (J. Pearsall, Ed.). Oxford, UK: Oxford University Press.
- Tulving, E. (1985). Memory and consciousness. *Canadian Psychologist*, 26, 1-12. doi: 10.1037/h0080017
- Turner, R. N., Wildschut, T., & Sedikides, C. (2012). Dropping the weight stigma: Nostalgia improves attitudes toward persons who are overweight. *Journal of Experimental Social Psychology*, 48, 130-137. doi: 10.1016/j.jesp.2011.09.007
- Turner, R. N., Wildschut, T., Sedikides, C., & Gheorghiu, M. (in press). Combating the mental health stigma with nostalgia. *European Journal of Social Psychology*.
- van Tilburg, W. A. P., Igou, E. R., & Sedikides, C. (in press). In search of meaningfulness: Nostalgia as an antidote to boredom. *Emotion*.
- Verplanken, B. (2012). When bittersweet turns sour: Adverse effects of nostalgia on habitual worriers. *European Journal of Social Psychology*, 42, 285-289. doi: 10.1002/ejsp.1852

- Vess, M., Arndt, J., Routledge, C., Sedikides, C., & Wildschut, T. (2012). Nostalgia as a resource for the self. *Self and Identity, 11*, 273-284. doi: 10.1080/15298868.2010.521452
- Viard, A., Chételat, G., Lebreton, K., Desgranges, B., Landeau, B., de La Sayette, V., . . . Piolino, P. (2011). Mental time travel into the past and the future in healthy aged adults: an fMRI study. *Brain and Cognition, 75*, 1-9. doi: 10.1016/j.bandc.2010.10.009
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.
- Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nostalgia: Content, triggers, functions. *Journal of Personality and Social Psychology, 91*, 975-993. doi: 10.1037/0022-3514.91.5.975
- Wildschut, T., Sedikides, C., Routledge, C., Arndt, J., & Cordaro, P. (2010). Nostalgia as a repository of social connectedness: The role of attachment-related avoidance. *Journal of Personality and Social Psychology, 98*, 573-586. doi: 10.1037/a0017597
- Wilson, A., & Ross, M. (2003). The identity function of autobiographical memory: Time is on our side. *Memory, 11*, 137-149. doi: 10.1080/741938210
- Zauberman, G., Ratner, R. K., & Kim, B. K. (2009). Memories as assets: Strategic memory protection over time. *Journal of Consumer Research, 35*, 715-728. doi: 10.1086/592943
- Zhou, X., Sedikides, C., Wildschut, T., & Gao, D. G. (2008). Counteracting loneliness: On the restorative function of nostalgia. *Psychological Science, 19*, 1023-1029. doi: 10.1111/j.1467-9280.2008.02194.x
- Zhou, X., Wildschut, T., Sedikides, C., Chen, X., & Vingerhoets, A. J. J. M. (2012). Heartwarming memories: Nostalgia maintains physiological comfort. *Emotion, 12*, 678-684.
- Zhou, X., Wildschut, T., Sedikides, C., Shi, K., & Feng, C. (2012). Nostalgia: The gift that keeps on giving. *Journal of Consumer Research, 39*, 39-50. doi: 10.1086/662199

Table 1. *Tests of Main effects and Interactions among Nostalgia, Gender, and Age in Study 3*

Effect	$F(1, 656)$	p	η_p^2
Nostalgia	24.02	< .001	.04
Gender	0.00	.944	.00
Age	12.79	< .001	.02
Nostalgia $\times$ Gender	3.91	.048	.01
Nostalgia $\times$ Age	0.06	.800	.00
Gender $\times$ Age	0.02	.888	.00
Nostalgia $\times$ Gender $\times$ Age	0.01	.939	.00

Table 2. *Tests of Direct and Indirect Effects in the Mediational Model of Study 4*

Figure 1				
Effect	path	Coeff.	SE	95% CI
Direct effects				
Nostalgia $\Rightarrow$ Social connectedness	a	.515**	.104	.301 to .719
Nostalgia $\Rightarrow$ Self-esteem	b	.192*	.091	.012 to .372
Nostalgia $\Rightarrow$ Optimism	c	.091	.074	-.046 to .253
Social connectedness $\Rightarrow$ Self-esteem	d	.348**	.071	.197 to .494
Social connectedness $\Rightarrow$ Optimism	e	-.047	.062	-.171 to .073
Self-esteem $\Rightarrow$ Optimism	f	.274**	.071	.132 to .412
Indirect effect: Nostalgia $\Rightarrow$ Self-esteem				
Via social connectedness	a * d	.180*	.052	.093 to .296
Indirect effect: Nostalgia $\Rightarrow$ Optimism				
Total		.077*	.041	.006 to .164
Via social connectedness	a * e	-.024	.033	-.093 to .040
Via self-esteem		.102*	.037	.043 to .187
Independent of social connectedness	b * f	.053*	.030	.009 to .129
Mediated by social connectedness	a * d * f	.049**	.019	.020 to .101

Note. Coeff. = unstandardized path coefficient; 95% CI = 95% bootstrap confidence interval;

** $p < .001$, * $p < .05$; $N = 127$.

Figure 1: *Mediational Model Tested in Study 4*