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### **The Measurement of Nostalgia**

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## Nostalgia

The term *nostalgia* was coined in the 17<sup>th</sup> century by the Swiss medical student Johannes Hofer (1688/1934). It is a compound of the Greek words *nostos* (return) and *algos* (pain). Hofer conceptualized nostalgia as a medical or neurological disease. Based on his studies of Swiss mercenaries in foreign service, who longed for their homeland, Hofer proposed that nostalgia was associated with despondency, bouts of weeping, fainting, indigestion, stomach pain, anorexia, high fever, cardiac palpitations, and suicidal ideation or even death. In his view, it was “a cerebral disease of essentially demonic cause” (p. 387). If Hofer were alive today, he would be dumbfounded to see nostalgia covered in the *Handbook of Positive Psychology Assessment*. What happened in the intervening centuries?

### Historical Background

Hofer’s (1688/1934) view of nostalgia as a medical or neurological disease remained influential throughout the 18<sup>th</sup> and 19<sup>th</sup> century. For some time, nostalgia was considered a condition confined to the Swiss, and acquired the label *mal du Suisse* (*Swiss illness*). This notion was abandoned, however, in light of documented cases of nostalgia in other groups, such as French soldiers fighting in the Revolutionary and Napoleonic armies (O’Sullivan, 2012), and American soldiers fighting in the Civil War (Matt, 2007). In the second half of the 19<sup>th</sup> century, the first dissenting opinion was heard. None other than Darwin (1872/1896) offered a more positive outlook on nostalgia in *The Expression of the Emotions in Man and Animals*, discussing “the vivid recollection of our former home, or of long-past happy days” under the heading of tender emotions (Chapter VIII, p. 216). Regrettably, Darwin’s voice was soon drowned out by the influential psychoanalytic movement. Scholars in this tradition labeled nostalgia an “immigrant psychosis (Frost, 1938, p. 801) and pondered “the importance of the preoedipal mother in the emotional developments of nostalgics” (Kleiner, 1977, p. 17). As in Hofer’s days, the construct came to be regarded as synonymous to homesickness and was presumed to be limited to very specific populations, such as soldiers, immigrants, and boarding school students (Jackson, 1986).

The publication of Davis's (1979) *Yearning for Yesteryear* toward the end of the 20<sup>th</sup> century was a turning point. He presented preliminary evidence that the term "homesickness" has more negative connotations than "nostalgia," steering the respective literatures onto separate paths. The homesickness literature focused on adjustment challenges (e.g., separation anxiety) that accompany young persons' transitions away from the home environment (Thurber & Walton, 2007), whereas the budding nostalgia literature began to uncover functional benefits of this emotion (Sedikides, Wildschut, Arndt, & Routledge, 2008; Wildschut, Sedikides, Arndt, & Routledge, 2006). In the four decades since Davis's groundbreaking work, nostalgia has attracted intense scholarly interest, within psychology and beyond. This burgeoning literature has now established nostalgia as a predominantly (albeit not purely) positive emotion with far-reaching implications for motivation and behavior. Nostalgia can serve as an intrapersonal and interpersonal resource that fosters psychological equanimity. It is prevalent, universal, and experienced across the lifespan (for reviews, see Sedikides & Wildschut, 2016, 2019; Sedikides et al., 2015).

### **Nostalgia Measures**

The sharp rise in nostalgia research has been mirrored by a remarkable proliferation of measures to assess this emotion, both as a relatively stable personality trait (i.e., nostalgia proneness) and as a short-lived, momentary state. This diversity is indicative of a vibrant research area, and it is inspiring to see "a hundred flowers bloom." Without claiming to be exhaustive, we present a selection of frequently used, peer-reviewed measures in Tables 1 (trait-level measures) and 2 (state-level measures). The information in these tables serves as a roadmap to primary sources and is intended to assist future researchers in identifying suitable measures for their specific research purposes. Space limitations do not permit a detailed discussion of scale development procedures, but this information is generally available from the primary sources. Rather than act as arbiters of quality, our main objective is to review common statistical and conceptual challenges that we have encountered in almost two decades of nostalgia research, and to suggest possible solutions. Before so doing, however, we make one recommendation regarding the selection of trait-level measures. This

recommendation is based on results from studies in which researchers administered multiple measures of nostalgia proneness and reported their inter-correlations. We present the relevant data in Table 3.

Although the correlation matrix is incomplete, certain patterns are discernible. First, the Southampton Nostalgia Scale (SNS) forms the core of a cluster that includes the Personal Inventory of Nostalgic Experiences (PINE;  $r = .66$ ), Nostalgia Proneness Index (NPI;  $r = .81$ ), Nostalgia Inventory (NI;  $.40 \leq r \leq .64$ ), and Past-Positive subscale of the Time Perspective Inventory (TPI:P-P;  $.36 \leq r \leq .61$ ). The substantial correlations support the construct validity of these five measures of personal nostalgia (Campbell & Fiske, 1959). Second, Holbrook's (1993) Nostalgia Scale, a measure that has been frequently used in past research and is still occasionally administered (Lammers & Baldwin, 2018), is relatively weakly correlated with the other scales ( $-.01 \leq r \leq .32$ ). Holbrook generated an initial set of 20 items to index nostalgia proneness. He then conducted a stepwise search to eliminate items until he obtained an acceptable chi-square fit for a single-factor model in an exploratory maximum-likelihood factor analysis. This process resulted in a final set of eight items, which formed the Nostalgia Scale. A subsequent confirmatory maximum-likelihood factor analysis of these eight items indicated good fit for a single-factor model. The Nostalgia Scale includes items such as "Things used to be better in the good old days," "Products are getting shoddier and shoddier," "Modern business constantly builds a better tomorrow," (reversed) and "Technological change will insure a brighter future" (reversed). Batcho (1998) proposed that Holbrook's scale assesses socio-historical nostalgia or "a respect or desire for the cultural values or political visions of an earlier historical period" (p. 413). Schindler and Holbrook (2003) conducted a principal components analysis on a set of 52 nostalgia-proneness items that comprised Holbrook's original 20 items, the 12 items of the Experience subscale from Taylor and Konrad's (1980) study of personal dispositions toward the past, and the 20 items of the Antiquarianism subscale from McKechnie's (1977) Environmental Response Inventory. This analysis yielded two dimensions. Items from the latter two instruments had high loadings on the first dimension, which Schindler and Holbrook labeled

the Antiques dimension. These items mostly concerned liking for things or objects from the past (e.g., “I would be happy living in an old house full of antique furniture and mementos of the past,” “I enjoy browsing in antique shops”). Holbrook’s original 20 items loaded primarily on the second dimension, which Schindler and Holbrook labeled the Decline dimension. Echoing Batcho (1998), they proposed that these items tap “the belief that the passing of time is associated with a decline in conditions” (p. 289).

In light of this evidence, we recommend that researchers who wish to assess trait-level nostalgia proneness select one or more measures from the inter-correlated set comprising (in chronological order) NI, TPI:P-P, SNS, NPI, and PINE. Under ideal circumstances, researchers could combine two or more measures from this set to meet Campbell and Fiske’s (1959) desideratum of implementing multiple converging operations (for an example of this approach, see Stephan et al., 2015, Study 1). These measures have high internal consistency (Table 1) and their convergent validity is supported by sizeable positive correlations with multiple independent attempts to assess the same construct (Table 3). In addition, they have encouraging test-retest reliabilities. For the NI, Batcho (1995) reported a 1-week test-retest reliability of .84. For the TPI:P-P, Zimbardo and Boyd (1999) reported a 4-week test-retest reliability of .76. Newman, Sachs, Stone, and Schwarz (2019) reported a 10-week test-retest correlation of .64 for the PINE, which equates to a Spearman-Brown reliability of .78. We used our data from the Longitudinal Internet Studies for the Social Sciences panel (see below) to calculate 4-month (November 2012 – March 2013) and 6½-year (November 2012 – April 2019) test-retest reliabilities for the SNS, which equaled .82 and .73, respectively. (Test-retest reliability for NPI is currently unavailable.)

We recommend Holbrook’s (1993) Nostalgia Scale, either in its 8- or 20-item version, to researchers with a specific interest in assessing socio-historical nostalgia or the distinctly conservative belief that society, institutions, people, and products were better in days of yore. Researchers interested in the concept of antiquarianism could select (and, ideally, combine) Taylor and Konrad’s (1980) Experience subscale and/or McKechnie’s (1977) Antiquarianism subscale. Normative information from large, randomly selected representative samples of

specific populations is scarce. However, we administered the SNS and NI to the Longitudinal Internet Studies for the Social Sciences panel, which comprises residents of The Netherlands who were selected based on a true probability sampling of households registered with Statistics Netherlands. Panel data can be accessed at [www.surveydata.nl/liss-panel-data-archive](http://www.surveydata.nl/liss-panel-data-archive).

### **Perils and Pitfalls**

We now consider some perils and pitfalls that we have encountered in past research, and make several design recommendations to address them. These challenges are neither new nor unique to the study of nostalgia, as they relate to the perennial limitations of correlational research: the third-variable problem and the reverse-causation problem (Campbell & Stanley, 1966; Cook & Campbell, 1979).

#### **Third-Variable Problem and the Perils of Partialling**

A study by Cheung, Wildschut, and Sedikides (2018) illustrated the third-variable problem in the context of nostalgia research. They showed that nostalgia proneness, as assessed with the SNS (Barrett et al., 2010), shares variance with rumination and counterfactual thinking. How this overlap is treated can profoundly affect conclusions regarding the nature of nostalgia proneness. Rumination is defined as “thoughts and behaviors that focus an individual’s attention on the negative mood, the causes and consequences of this mood, and self-evaluations related to the mood” (Rusting & Nolen-Hoeksema, 1998, p. 790). It was assessed with the Ruminative Responses Scale (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). Counterfactual thinking is the cognitive process of imagining alternatives to the past and considering how certain events could have resulted in a different outcome. It was assessed with the Counterfactual Thinking for Negative Events Scale (Rye, Cahoon, Ali, & Daftary, 2008).

To characterize the similarities and differences among nostalgia, rumination, and counterfactual thinking, Cheung et al. (2018) examined their respective associations with the functions or uses of autobiographical memory, which they assessed with the 39-item Modified Reminiscence Functions Scale (Washington, 2009). These functions are: Self-

Regard (using memories to reaffirm positive self-attributes), Conversation (referring to shared past experiences to spice up conversations), Boredom Reduction (recalling past experiences to alleviate tedium and break monotony), Intimacy Maintenance (using memories to feel closer to important [deceased] others), Death Preparation (using memories to better accept one's own mortality), Teach/Inform (sharing memories to pass on important insights about life and/or oneself), and Bitterness Revival (using memories to rekindle resentment toward others).

Cheung et al. (2018) found that nostalgia proneness was positively correlated with rumination and counterfactual thinking (which were also positively correlated). We suggest that these correlations could point to a general or *g* factor reflecting global individual differences in past orientedness. More to the point, how one treats the overlap among these variables will shape conclusions regarding the nature of nostalgia proneness. For illustrative purposes, we focus on the association between nostalgia and Bitterness Revival scores. Evidence concerning the relation between memory functions and mental health indicates that using memories to rekindle resentment (as indexed by Bitterness Revival) is “negatively related to almost all aspects of mental health that have been studied” (Westerhof, Bohlmeijer, & Webster, 2010, p. 706). The significant, positive correlation between nostalgia proneness and Bitterness Revival ( $r = .26, p < .001$ ) suggests, then, that nostalgia is maladaptive. However, rumination and counterfactual thinking were also positively correlated with Bitterness Revival, and more strongly so than nostalgia. Controlling for these “third variables” in a multiple regression analysis significantly reduced the magnitude of the nostalgia—Bitterness Revival association and rendered it non-significant ( $\beta = .06$ ). This result points to a different conclusion about nostalgia.

The process of controlling for, or partialling, “third variables” can be perilous, however. A key concern relates to the substantive interpretation of a predictor variable after the variance shared with other predictors is removed. This problem is most severe when the variables in the predictor set are highly correlated, have fuzzy boundaries, and are unreliable. The problem is ameliorated when correlations among predictors are modest, the constructs

are homogeneous or clearly delineated, and the measures are reliable (Lynam, Hoyle, & Newman, 2006). When these conditions can be met, controlling for “third variables,” such as rumination, can provide a clearer picture of nostalgia’s nomological net. Where there are discrepancies, prior theory and evidence should also play a role in deciding whether to place confidence in the zero-order or partial relations (Hoyle & Robinson, 2004). In our illustrative case, one could turn to findings by Van Tilburg, Wildschut, and Sedikides (2018). They instructed participants to rate the similarities/differences between nostalgia and 10 other emotions: embarrassment, gratitude, guilt, hurt feelings, inspiration, passion, pride, self-compassion, shame, and unrequited love. If nostalgia is associated with resentful recollection of perceived slights at the hands of others (Bitterness Revival), it should be perceived as relatively similar to hurt feelings and dissimilar to gratitude. Instead, the opposite was the case: nostalgia was perceived as similar to gratitude and dissimilar to hurt feelings. This lends credence to the nonsignificant partial relation between nostalgia proneness and Bitterness Revival, and casts doubt on the positive zero-order relation.

### **Reverse-Causation Problem and the Role of Experiments**

The second issue that deserves careful scrutiny is the reverse-causation problem. This issue is, of course, endemic in correlational research, but it may have special relevance to nostalgia. To understand why this is the case, one has to revisit Hofer (1688/1934) and his acolytes. They observed that nostalgia was associated with dysfunctional symptoms (e.g., anxiety, depression, bouts of weeping, loss of appetite, insomnia, anorexia, suicidal ideation), and rushed to the conclusion that nostalgia was the cause of such symptoms. It is surprising that they never considered the reverse causal sequence. After all, the selectively studied populations (e.g., mercenaries, soldiers, immigrants) were facing considerable challenges under adverse, and sometimes life-threatening, circumstances in unfamiliar or dangerous environments. The possibility that nostalgia was triggered by (rather than being the cause of) psychological and physiological adversity was hiding in plain sight.

In more recent years, however, the idea that nostalgia acts as a coping mechanism in times of adversity has gained traction (Wildschut, Sedikides, & Cordaro, 2011).



The link between loneliness and nostalgia is an illustrative case. Initial evidence for a relation between loneliness and nostalgia emerged when we (Wildschut et al., 2006, Study 2) asked British undergraduates to write about the circumstances under which they become nostalgic. The most frequently mentioned trigger of nostalgia (38% of responses) was negative affect (e.g., “Generally I think about nostalgic experiences when things are not going very well—lonely or depressed.”). Within this broad category of negative affect, loneliness was by far the most common discrete affective state. One participant wrote, for example: “If I ever feel lonely or sad, I tend to think of my friends or family whom I haven’t seen for a long time.”

A series of studies by Zhou, Sedikides, Wildschut, and Gao (2008) threw the reverse-causation problem in stark relief. In their first study, they administered measures of loneliness (UCLA Loneliness Scale; Russell, 1996), nostalgia proneness (SNS), and perceived social support (Multidimensional Scale of Perceived Social Support; Zimet, Dahlem, Zimet, & Farley, 1988) to 758 Chinese children who had migrated with their parents from rural areas to a large city. (A pilot study established that Chinese elementary-school children understood the meaning of the Chinese word for nostalgia, *huaijiu*, and showed good comprehension of the SNS.) Zero-order correlations revealed that, not surprisingly, loneliness was negatively correlated with perceived social support ( $r = -.17, p < .001$ ). Furthermore, nostalgia proneness was positively correlated with loneliness ( $r = .14, p < .001$ ). At first glance, this finding would seem to support the bleak, Hoferian view of nostalgia. Yet, nostalgia proneness was also positively correlated with perceived social support ( $r = .33, p < .001$ ). How to make sense of this perplexing pattern of correlations? Zhou et al. formulated a model that specified three causal paths: (1) loneliness leads to reduced perceptions of perceived social support, (2) loneliness increases nostalgia, and (3) nostalgia fosters perceived social support (because it frequently pertains to close others; Wildschut et al., 2006). This model specifies that loneliness affects perceived social support in two distinct ways. Whereas the direct effect of loneliness is to reduce perceived social support, the indirect effect of loneliness is to increase perceived social support via nostalgia. In statistical terms, this pattern of relations gives rise to a situation of suppression or inconsistent mediation. When the

intervening variable is controlled for, the direct effect of the initial predictor is strengthened (as opposed to weakened like in ordinary mediation models; Paulhus, Robins, Trzesniewski, & Tracy, 2004). Results supported these predictions. When the presumed palliative role of nostalgia proneness was controlled for, the negative association between loneliness and perceived social support became significantly more negative. In summary, lonely migrant children perceived little social support, but were also the most nostalgic. This high level of nostalgia, in turn, predicted increased perceptions of social support.

To be sure, although Zhou et al. (2008, Study 1) showed that nostalgia need not cause loneliness, evidence for the postulated reverse effect of loneliness on nostalgia was suggestive at best; wishing for a causal relation does not make it so. Even when ignoring the third-variable problem, one still has to contend with the fact that three variables can be ordered in six different sequences, with the number of possible sequences increasing exponentially with each added variable. One approach to this issue has been to use structural equation modeling to compare alternative sequences (e.g., Cheung, Sedikides, & Wildschut, 2017). The Akaike Information Criterion (AIC; Akaike, 1974) and Expected Cross Validation Index (ECVI; Browne & Cudeck, 1993) can be used to compare competing models. Another approach has been to implement longitudinal designs and cross-lagged analyses (Newman, Sachs, Stone, & Schwarz, 2019). Whereas both approaches are informative, neither is conclusive. Experiments can furnish more decisive evidence.

Returning to our illustrative case, Zhou et al. (2008, Studies 2-3) implemented an experimental causal chain design (Spencer, Zanna, & Fong, 2005) to test their postulated model (loneliness  $\Rightarrow$  nostalgia  $\Rightarrow$  perceived social support). To examine the first link in the chain, they experimentally induced loneliness and then measured nostalgia. Participants completed the ostensibly valid and reliable Southampton Loneliness Scale, which consisted of 10 items drawn from the UCLA Loneliness Scale. In the high-loneliness condition, items were phrased so as to elicit agreement (e.g., “I sometimes feel alone”). In the low-loneliness condition, items were phrased so as to elicit disagreement (e.g., “I always feel alone”). As intended, participants in the high-loneliness condition agreed with more items than

participants in the low-loneliness condition. Next, the researchers told those in the high-loneliness condition that they were “well above average on loneliness” compared to their peers. Those in the low-loneliness condition were informed that they were “very low on loneliness” compared to their peers. As a final step, participants were instructed to list reasons for their loneliness score. Following the (successful) loneliness manipulation, momentary nostalgia was assessed with a state version of the SNS. We present additional information about this and other assessments of state-level nostalgia in Table 2. As hypothesized, participants in the high-loneliness condition reported significantly higher levels of nostalgia than those in the low-loneliness condition. To test the second link in the chain, the researchers induced nostalgia and then measured perceived social support. Participants in the nostalgia condition were instructed to bring to mind and reflect on a nostalgic event from their past. Participants in the control condition brought to mind and reflected on an ordinary event from their past. Next, participants completed two measures of perceived social support. One was a state version of the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) and the other involved estimating how many friends would volunteer their time to help one receive extra course credit. As hypothesized, nostalgic participants (compared to controls) reported higher overall levels of perceived social support.

Similar evidence has accumulated for the palliative or homeostatic role of nostalgia in reaction to other types of psychological and physiological threat: nostalgia and adversity are linked, but the direction of causality is from adversity to increased nostalgia, rather than the reverse (for reviews, see Sedikides et al., 2015; Sedikides & Wildschut, 2016; Sedikides, Wildschut, & Stephan, 2018). By drawing attention to this issue, we want to raise awareness that characterizing nostalgia as either adaptive or maladaptive on the sole basis of correlational data is tenuous at best. This is not meant to say that experiments offer a methodological panacea or that correlations are uninformative, but correlations serve as investigative starting point rather than conclusion.

### **Varieties of Nostalgia**

The sheer diversity of nostalgia research does not permit an exhaustive review but, before closing, we touch briefly on notable contributions and developments. A well-established and generative tradition in consumer research is concerned with advertising- and brand-evoked nostalgia (Holbrook, 1993; Merchant, Latour, Ford, & Latour, 2013). In a typical study, participants view a number of product advertisements and, for each, rate their level of evoked nostalgia, as well as product-related attitudes and purchase intentions. Findings consistently indicate that advertising-evoked nostalgia is positively associated with favorable product-related attitudes and purchase intentions (Pascal, Sprott, & Muehling, 2002). We refer the interested reader to Jain, Merchant, Roy, and Ford (2019), who provided a comprehensive overview of advertising- and brand-evoked nostalgia measures.

Another rich vein of research has explored nostalgia at the relational and collective levels of self-definition (Sedikides & Brewer, 2001). In a study by Hepper, Wildschut, and Sedikides (2016), dyads (friends and romantic couples) completed measures of attachment style, nostalgia-proneness within their relationship, and relationship satisfaction. Attachment-anxiety was negatively associated with relationship satisfaction only for those low, not high, in relational nostalgia. At the collective level, organizational nostalgia (a sentimental longing or wistful affection for past events and aspects of one's organizational life, including buildings, colleagues, leaders, technology) is positively associated with work meaning and reduces turnover intentions (Leunissen, Sedikides, Wildschut, & Cohen, 2018). Likewise, group-level nostalgia (Wildschut, Bruder, Robertson, Van Tilburg, & Sedikides, 2014) and national nostalgia (Smeekes, 2015) have been linked with positive attitudes and behavior toward the ingroup. The link between these collective forms of nostalgia and outgroup attitudes is more nuanced and context dependent, however, with some studies suggesting a negative association (Cheung, Sedikides, Wildschut, Tausch, & Ayanian, 2017) and others identifying potential benefits for intergroup harmony (Martinovic, Jetten, Smeekes, & Verkuyten, 2017).

To conclude, the field of nostalgia is young, diverse, vibrant, and, admittedly, somewhat anarchic and in flux. Provided that researchers can avoid its least disguised pitfalls and perils, long may it stay that way.

## References

- Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control*, *19*, 716–723. doi:10.1109/TAC.1974.1100705.
- Baldwin, M., Biernat, M., & Landau, M. J. (2015). Remembering the real me: Nostalgia offers a window to the intrinsic self. *Journal of Personality and Social Psychology*, *108*, 128-147. doi:10.1037/a0038033
- Baldwin, M., White, M. H., & Sullivan, D. (2018). Nostalgia for America's past can buffer collective guilt. *European Journal of Social Psychology*, *48*, 433-446. doi:10.1002/ejsp.2348.
- 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
- Batcho, K. I. (1995). Nostalgia: A psychological perspective. *Perceptual and Motor Skills*, *80*, 131-143. doi:10.2466/pms.1995.80.1.131
- Batcho, K. I. (1998). Personal nostalgia, world view, memory, and emotionality. *Perceptual and Motor Skills*, *87*, 411-432. doi:10.2466/pms.1998.87.2.411
- Batcho, K. I. (2007). Nostalgia and the emotional tone and content of song lyrics. *American Journal of Psychology*, *120*, 361-381. doi:10.2307/20445410
- Batcho, K. I., Nave, A. M., & DaRin, M. L. (2011). A retrospective survey of childhood experiences. *Journal of Happiness Studies*, *12*, 531-545. doi:10.1007/s10902-010-9213-y
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, *56*, 81–105. doi:10.1037/h0046016
- Campbell, D. T., & Stanley, J. C. (1966). *Experimental and quasi-experimental designs for*

- research*. Chicago, IL, USA: Rand McNally.
- Cheung, W. Y., Sedikides, C., & Wildschut, T. (2016). [Nostalgia Proneness Index: Development and validation]. Unpublished raw data, University of Winchester.
- Cheung, W. Y., Sedikides, C., & Wildschut, T. (2017). Nostalgia proneness and reduced prejudice. *Personality and Individual Differences, 15*, 89-97.  
doi:10.1016/j.paid.2016.12.045
- Cheung, W. Y., Sedikides, C., Wildschut, T., Tausch, N., & Ayanian, A. H. (2017). Collective nostalgia is associated with stronger outgroup-directed anger and participation in ingroup-favoring collective action. *Journal of Social and Political Psychology, 5*, 301-319. doi: 10.5964/jspp.v5i2.697
- Cheung, W. Y., Wildschut, T., & Sedikides, C. (2018). Autobiographical memory functions of nostalgia in comparison to rumination and counterfactual thinking: Similarity and uniqueness. *Memory, 26*, 229-237.  
doi:10.1080/09658211.2017.1346129
- Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis issues for field settings*. Boston, MA: Houghton Mifflin.
- Darwin, C. (1896). *The expression of the emotions in man and animals*. New York, NY: D. Appleton and Company. (Original work published 1872)
- Davis, F. (1979). *Yearning for yesterday: A sociology of nostalgia*. New York, NY: The Free Press.
- Frost, I. (1938). Homesickness and immigrant psychoses. *Journal of Mental Science, 84*, 801-847. doi:10.1192/bjp.84.352.801
- Hepper, E. G., Wildschut, T., & Sedikides, C. (2016, July). *Nostalgia buffers perceptions of relationship quality and partner behaviour for anxiously attached individuals*. Paper presented at International Association of Relationship Research Conference, Toronto, Canada.
- Hofer, J. (1934). Medical dissertation on nostalgia. (C. K. Anspach, Trans.). *Bulletin of the History of Medicine, 2*, 376-391. (Original work published 1688)

- Holbrook, M. (1993). Nostalgia and consumption preferences: Some emerging patterns of consumer tastes. *Journal of Consumer Research*, 20, 245-265. doi:10.1086/209346
- Hoyle, R. H., & Robinson, J. I. (2004). A reasoned approach to measurement in social psychological research. In C. Sansone, C. Morf, & A. T. Panter (Eds.), *Handbook of methods in social psychology*. Thousand Oaks, CA: Sage.
- 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
- Jackson, S. W. (1986). *Melancholia and depression: From Hippocratic times to modern times*. New Haven, CT: Yale University Press.
- Jain, V., Merchant, A., Roy, S., & Ford, J. B. (2019). Developing an emic scale to measure ad-evoked nostalgia in a collectivist emerging market, India. *Journal of Business Research*, 99, 140-156. doi:10.1016/j.jbusres.2019.02.039
- Juhl, J., Wildschut, T., Sedikides, C., Diebel, T., Cheung, W. Y., & Vingerhoets, A. J. J. M. (2019). Nostalgia proneness and empathy: Generality, underlying mechanism, and implications for prosocial behavior. *Journal of Personality*. Advance online publication. doi:10.1111/jopy.12505.
- Kleiner, J. (1977). On nostalgia. In C. W. Socarides (Ed.), *The world of emotions* (pp. 471-498). New York, NY: International University Press.
- Lammers, J., & Baldwin, M. (2018). Past-focused temporal communication overcomes conservatives' resistance to liberal political ideas. *Journal of Personality and Social Psychology*, 114, 599-619. doi:10.1037/pspi0000121
- Leunissen, J., Sedikides, C., Wildschut, T., & Cohen, T. R. (2018). Organizational nostalgia increases work meaning: The moderating role of burnout. *Journal of Occupational Health Psychology*, 23, 44-57. doi:10.1037/ocp0000059
- Luo, Y. L. L., Liu, Y., Cai, H., Wildschut, T., & Sedikides, C. (2016). Nostalgia and self-enhancement: Phenotypic and genetic approaches. *Social Psychological and Personality Science*, 7, 857-866. doi:10.1177/1948550616660158



- Lynam, D. R., Hoyle, R. H., & Newman, J. P. (2006). The perils of partialling: Cautionary tales from aggression and psychopathy. *Assessment, 13*, 328–341.  
doi:10.1177/1073191106290562
- Martinovic, B., Jetten, J., Smeekes, A., & Verkuyten, M. (2018). Collective memory of a dissolved country: Collective nostalgia and guilt as predictors of interethnic relations between diaspora groups from former Yugoslavia. *Journal of Social and Political Psychology, 5*, 588-607. doi:10.5964/jspp.v5i2.733
- Matt, S. J. (2007). You can't go home again: Homesickness and nostalgia in U.S. history. *Journal of American History, 94*, 469-497. doi:10.2307/25094961
- McKechnie, G. E. (1977). The Environmental Response Inventory in application. *Environment and Behavior, 9*, 255-276. doi:10.1177/001391657792006
- Merchant, A., Latour, K., Ford, J. B., & Latour, M. S. (2013). How strong is the pull of the past? Measuring personal nostalgia evoked by advertising. *Journal of Advertising Research, 53*, 150-165. doi:10.2501/JAR-53-2-150-165
- Newman, D. B., Sachs, M. E., Stone, A. A. & Schwarz, N. (2019). Nostalgia and well-being in daily life: An ecological validity perspective. *Journal of Personality and Social Psychology*. Advance online publication. doi: 10.1037/pspp0000236
- O'Sullivan, L. (2012). The time and place of nostalgia: Re-situating a French Disease. *Journal of the History of Medicine and Allied Sciences, 67*, 626-649.  
doi:10.1093/jhmas/jrr058
- Pascal, V. J., Sprott, D. E., & Muehling, D. D. (2002). The Influence of evoked nostalgia on consumers' responses to advertising: An exploratory study. *Journal of Current Issues and Research in Advertising, 24*, 39-49. doi:10.1080/10641734.2002.10505126
- Paulhus, D., Robins, R., Trzesniewski, K., & Tracy, J. (2004). Two replicable suppressor situations in personality research. *Multivariate Behavioral Research, 39*, 301-326.  
doi:10.1207/s15327906mbr3902\_7
- Reid, C. A., Green, J. D., Wildschut, T., & Sedikides, C. (2015). Scent-evoked nostalgia. *Memory, 23*, 157-166. doi:10.1080/09658211.2013.876048

- Rousseau, G. G., & Venter (2000). The relationship between nostalgia and consumer preference: Replication and extension. *Journal of Industrial Psychology, 26*, 32-36. doi:10.4102/sajip.v26i2.705
- 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
- Russell, D. (1996). The UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment, 66*, 20-40. doi:10.1207/s15327752jpa6601\_2
- Rusting, C. L., & Nolen-Hoeksema, S. (1998). Regulating responses to anger: Effects of rumination and distraction on angry mood. *Journal of Personality and Social Psychology, 74*, 790-803. doi:10.1037/0022-3514.74.3.790
- Rye, M. S., Cahoon, M. B., Ali, R. S., & Daftary, T. (2008). Development and validation of the Counterfactual Thinking for Negative Events Scale. *Journal of Personality Assessment, 90*, 261-269. doi:10.1080/00223890701884996
- Schindler, R. M., & Holbrook, M. B. (2003). Nostalgia for early experience as a determinant of consumer preferences. *Psychology & Marketing, 20*, 275-302. doi:10.1002/mar.10074
- Sedikides, C., & Brewer, M. B. (Eds.). (2001). *Individual self, relational self, collective self*. Philadelphia, PA: Psychology Press.
- Sedikides, C., & Wildschut, T. (2016). Past forward: Nostalgia as a motivational force. *Trends in Cognitive Sciences, 20*, 319-321. doi:10.1016/j.tics.2016.01.008
- Sedikides, C., & Wildschut, T. (2019). The sociality of personal and collective nostalgia. *European Review of Social Psychology, 30*, 123-173. doi:10.1080/10463283.2019.1630098
- 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., Cheung, W.-Y., Routledge, C., Hepper, E. G., Arndt, J., Vail, K., Zhou, X., Brackstone, K., & Vingerhoets, A. J. J. M. (2016). Nostalgia fosters self-continuity: Uncovering the mechanism (social connectedness) and the consequence (eudaimonic well-being). *Emotion, 16*, 524-539.  
doi:10.1037/emo0000136
- Sedikides, C., Wildschut, T., Routledge, C., Arndt, J., Hepper, E. G., & Zhou, Z. (2015). To nostalgize: Mixing memory with affect and desire. *Advances in Experimental Social Psychology, 51*, 189-273. doi:10.1016/bs.aesp.2014.10.001
- Sedikides, C., Wildschut, T., & Stephan, E. (2018). Nostalgia shapes and potentiates the future. In J. P. Forgas & R. F. Baumeister (Eds.), *The social psychology of living well* (pp. 181-199). New York, NY: Routledge.
- Smeeke, A. (2015). National nostalgia: a group-level emotion that benefits the in-group but hampers intergroup relations. *International Journal of Intercultural Relations, 49*, 54-67. doi:10.1016/j.ijintrel.2015.07.001
- Spencer, S. J., Zanna, M., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology, 89*, 845-851.  
doi:10.1037/0022-3514.89.6.845
- Stephan, E., Sedikides, C., Wildschut, T., Cheung, W. Y., Routledge, C., & Arndt, J. (2015). Nostalgia-evoked inspiration: Mediating mechanisms and motivational consequences. *Personality and Social Psychology Bulletin, 41*, 1395-1410.  
doi:10.1177/0146167215596985
- Stephan, E., Wildschut, T., Sedikides, C., Zhou, X., He, W., Routledge, C., Cheung, W. Y., & Vingerhoets, A. J. J. M. (2014). The mnemonic mover: Nostalgia regulates avoidance and approach motivation. *Emotion, 14*, 545-561. doi:10.1037/a0035673
- Taylor, S. M., & Konrad, V. A. (1980). Scaling dispositions toward the past. *Environment and Behavior, 12*, 283-307. doi:10.1177/0013916580123001
- Thurber, C. A. & Walton, E. A. (2007). Preventing and treating homesickness. *Pediatrics, 119*, 1033-1038.

119, 843-858. doi:10.1542/peds.2006-2781

Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research, 27*, 247-259.

doi:10.1023/A:1023910315561

Tullett, A., Wildschut, T., Inzlicht, M., & Sedikides, C. (2015). Right-frontal cortical asymmetry predicts increased proneness to nostalgia. *Psychophysiology, 52*, 990-996.

doi:10.1111/psyp.12438

Van Tilburg, W. A. P., Sedikides, C., & Wildschut, T. (2018). Adverse weather evokes nostalgia. *Personality and Social Psychology Bulletin, 44*, 984-995.

doi:10.1177/0146167218756030

Van Tilburg, W. A. P., Wildschut, T., & Sedikides, C. (2018). Nostalgia's place among self-relevant emotions. *Cognition and Emotion, 32*, 742-759.

doi:10.1080/02699931.2017.1351331

Washington, G. (2009). Modification and psychometric testing of the Reminiscence Functions Scale. *Journal of Nursing Measurement, 17*, 134-147. doi:10.1891/1061-

3749.17.2.134

Westerhof, G. J., Bohlmeijer, E., & Webster, J. D. (2010). Reminiscence and mental health: A review of recent progress in theory, research, and interventions. *Ageing & Society, 30*,

697-721. doi:10.1017/S0144686X09990328

Wildschut, T., Bruder, M., Robertson, S., Van Tilburg, W. A. P., & Sedikides, C. (2014).

Collective nostalgia: A group-level emotion that confers unique benefits on the group.

*Journal of Personality and Social Psychology, 107*, 844-863. doi:10.1037/a0037760

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., & Cordaro, F. (2011). Self-regulatory interplay between positive and negative 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.

- Wohl, M. J. A., Kim, H. S., Salmon, M., Santesso, D., Wildschut, T., & Sedikides, C. (2018). Discontinuity-induced nostalgia improves the odds of a self-reported quit attempt among people living with addiction. *Journal of Experimental Social Psychology, 75*, 83-94. doi:10.1016/j.jesp.2017.11.011
- Zhou, X., Sedikides, C., Wildschut, C., & 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. doi:10.1037/a0028236
- Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-difference metric. *Journal of Personality and Social Psychology, 77*, 1271-1288. doi:10.1037/0022-3514.77.6.1271
- Zimet, G. D., Dahlem, N. W., Zimet, S. G. & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment, 52*, 30-41. doi:10.1207/s15327752jpa5201\_2
- Zou, X., Lee, M., Wildschut, T., & Sedikides, C. (2019). Nostalgia increases financial risk taking. *Personality and Social Psychology Bulletin, 45*, 907-919. doi:10.1177/0146167218799717
- Zou, X., Wildschut, T., Cable, D., & Sedikides, C. (2018). Nostalgia for host culture facilitates repatriation success: The role of self-continuity. *Self and Identity, 17*, 327-342. doi:10.1080/15298868.2017.1378123

Table 1. *Examples of Trait-Level Nostalgia Measures*

Scale name	Key source	Items	$\alpha$	Comments
Southampton Nostalgia Scale for Children (SNS-C)	Juhl et al. (2019)	7	.87	This scale is an adaptation of the Southampton Nostalgia Scale. It uses cartoon drawings and accompanying vignettes to explain the meaning of the word 'nostalgia' to children.
Personal Inventory of Nostalgic Experiences	Newman, Sachs, Stone, and Schwarz (2019)	4	.91	Newman et al. (2019) used this scale to measure trait-level nostalgia (Study 2) and daily nostalgia (Studies 3 and 5).
Nostalgia Scale	Baldwin, White, and Sullivan (2018)	16	See comments	This scale is an adaptation of Batcho's (1995) Nostalgia Inventory, with four subscales: Personal Experience ( $\alpha = .76$ ); Popular Culture ( $\alpha = .87$ ); Society ( $\alpha = .78$ ); Childhood ( $\alpha = .90$ ).
Nostalgia Proneness Index	Cheung, Sedikides, and Wildschut (2017)	10	.86	Cheung et al. (2017, Study 1) instructed participants to rate both the frequency and importance of five behaviors related to prototypical features of nostalgia (e.g., "I bring to mind rose-tinted memories").
Southampton Nostalgia Scale (7-item version)	Barrett et al. (2010)	7	.93	Barrett et al. (2010) added two items to the 5-item version of the scale developed by Routledge, Arndt, Sedikides, and Wildschut (2008).

Southampton Nostalgia Scale (5-item version)	Routledge, Arndt, Sedikides, and Wildschut (2008)	5	.92	
Modified Holbrook (1993) Nostalgia Scale	Rousseau and Venter (2000)	38	See comments	Rousseau and Venter (2000) used all 20 items generated by Holbrook (1993) and added 18 items, resulting in a 38-item scale with four subscales: Nostalgia ( $\alpha = .77$ ); Progressiveness ( $\alpha = .74$ ); Consumer Nostalgic Preference ( $\alpha = .77$ ); Vintage/Antiques Propensity ( $\alpha = .72$ ).
Time Perspective Inventory: Past-Positive subscale	Zimbardo and Boyd (1999)	9	.80	Routledge, Arndt, Sedikides, and Wildschut (2008) used a subset of eight items from the Time Perspective Inventory to assess nostalgia proneness ( $\alpha = .71$ ). For four items, higher ratings indicated greater nostalgia. For the other four items, higher ratings indicated lower nostalgia (reversed). Five items were drawn from the Past-Positive subscale (one reversed), with the remaining three items being drawn from the Past-Negative subscale (all reversed). Cheung et al. (2017, Study 4) dropped one of the reverse-scored items from the Past-Positive scale ( $\alpha = .65$ ).
Nostalgia Inventory	Batcho (1995)	20	.84	Batcho (1995) instructed participants to rate how much they “miss” these 20 items from their past. Recently, researchers have instructed participants

				to rate how “nostalgic” they feel for the items from their past (e.g., Zou, Lee, Wildschut, & Sedikides, 2019; $\alpha = .87$ )
Nostalgia Scale (8-item version)	Holbrook (1993)	8	.78	Holbrook (1993) generated a pool of 20 items, from which he selected eight. Other researchers have indexed nostalgia proneness with all 20 items generated by Holbrook (e.g., Schindler & Holbrook, 2003; $\alpha = .81$ ).
Dispositions Toward the Past	Taylor and Konrad (1980)	48	See comments	This scale comprises four subscales: Conservation ( $\alpha = .86$ ); Interest ( $\alpha = .87$ ); Heritage ( $\alpha = .84$ ); Experience ( $\alpha = .79$ ). Schindler and Holbrook (2003) used the Experience subscale as measure of nostalgia proneness ( $\alpha = .71$ ).
Environmental Response Inventory: Antiquarianism subscale	McKechnie (1977)	20	.61	

*Note.*  $\alpha$  = Cronbach’s reliability alpha as reported in key source. For NI (Batcho, 1995),  $\alpha$  = 1-week test-retest reliability. For Antiquarianism subscale of Environmental Response Inventory (McKechnie, 1977),  $\alpha$  as reported in Schindler and Holbrook (2003).



Table 2. *Examples of State-Level Nostalgia Measures*

Key source	Items	$\alpha$	Comments
Baldwin, White, and Sullivan (2018)	3	.93	Baldwin et al. (2018, Study 2) assessed state-level nostalgia with three items: “nostalgic,” “sentimental,” and “longing”
Zou, Wildschut, Cable, and Sedikides (2018)	10	.89	Zou et al. (2018) assessed nostalgia for a host culture. Repatriates rated their level of nostalgia for 10 objects they had encountered in their host culture (e.g., “the town where I lived”).
Sedikides et al. (2016)	1	See comments	Five judges coded participant-generated autobiographical narratives for intensity of expressed nostalgia (“How much nostalgia did the person who wrote this narrative experience?”). Interrater reliability was high (.98).
Baldwin, Biernat, and Landau (2015)	4	.88	Baldwin et al. (2015, Studies 1 and 5) assessed state-level nostalgia with four items: “nostalgic,” “wistful,” “sentimental,” and “a longing for my past.”
Reid, Green, Wildschut, and Sedikides (2015)	1	.80	Reid et al. (2015) assessed scent-evoked nostalgia. Participants evaluated twelve scents. For each scent, they rated the item: “How nostalgic does this scent make you feel?” Reid et al. indexed scent-evoked nostalgia by averaging these ratings across the twelve scents.
Zhou, Wildschut, Sedikides, Chen, and Vingerhoets (2012)	1	--	Zhou et al. (2012, Study 1) assessed daily nostalgia. Participants rated their daily level of nostalgia for 30 consecutive days.

Iyer and Jetten (2001)	4	.86	Iyer and Jetten (2001, Study 2) used four items to assess first-year undergraduates' nostalgia about their lives and communities before university. Other researchers used all or some of these items to assess how nostalgic problem gamblers and/or problem drinkers felt for their life before addiction (e.g., Wohl et al., 2018, Experiment 1; $\alpha = .73$ ).
Barrett et al. (2010)	1	--	Barrett et al. (2010) assessed music-evoked nostalgia. Participants listened to thirty musical excerpts. For each excerpt, they rated the item: "How nostalgic does this song make you feel?" Batcho (2007) used this single item ("nostalgic") to assess song-lyric evoked nostalgia.
Zhou, Sedikides, Wildschut, and Gao (2008)	5	.71	Zhou et al. (2008, Study 2) adapted the Southampton Nostalgia Scale (Routledge et al., 2008) to create an index of state-level nostalgia (for a similar measure of daily nostalgia, see Van Tilburg, Sedikides, & Wildschut, 2018, Study 2; $\alpha = .97$ ).
Wildschut, Sedikides, Arndt, and Routledge (2006)	18	.88	Wildschut et al. (2006, Studies 3-4) created an 18-item state version of Batcho's (1995) Nostalgia Inventory. They did not include the items "church/religion" and "heroes/heroines." Other researchers have used all 20 items (e.g., Stephan et al., 2014, Study 2; $\alpha = .92$ ).
Wildschut, Sedikides, Arndt, and Routledge (2006)	3	.95	This 3-item measure introduced by Wildschut et al. (2006, Study 3) has been frequently used as a manipulation check in studies with an experimental nostalgia induction. Van Tilburg, Sedikides, and Wildschut (2018, Study 1) adapted this measure to assess weather-evoked nostalgia ( $\alpha = .96$ ).

Table 3. *Correlations among Trait-Level Nostalgia Measures*

	PINE	NPI	SNS	TPI:P-P	NI	NS	DTP:E	ERI:A
PINE	--		7	7				
NPI		--	5					
SNS	.66	.81	--	6, 8	8, 10, 11, 12, 13			
TPI:P-P	.40		.36 to .61		4	4		
NI			.40 to .64	.21	--	1, 2, 3, 4		
NS				.01	-.01 to .32	--	9	9
DTP:E						.14	--	9
ERI:A						.22	.56	--

*Note.* Zero-order correlations are presented below the diagonal. Sources are indicated above the diagonal. PINE = Personal Inventory of Nostalgic Experiences (Newman et al., 2019). NPI = Nostalgia Proneness Index (Cheung et al., 2017); SNS = Southampton Nostalgia Scale (Barrett et al., 2010; Routledge et al., 2008). TPI:P-P = Past-Positive subscale of the Time Perspective Inventory (Zimbardo & Boyd, 1999). NI = Nostalgia Inventory (Batcho, 1995). NS = Nostalgia Scale (Holbrook, 1993). DTP:E = Experience subscale of Dispositions Toward the Past scales (Taylor & Konrad, 1980). ERI:A = Antiquarianism subscale of Environmental Response Inventory (McKechnie, 1977).

*Sources.* <sup>1</sup> Batcho (1998); <sup>2</sup> Batcho (2007); <sup>3</sup> Batcho et al. (2008); <sup>4</sup> Batcho, Nave, and DaRin (2011); <sup>5</sup> Cheung, Sedikides, and Wildschut (2016); <sup>6</sup> Luo, Liu, Cai, and Wildschut (2016); <sup>7</sup> Newman et al. (2019); <sup>8</sup> Routledge et al. (2008); <sup>9</sup> Schindler and Holbrook (2003); <sup>10</sup> Stephan et al. (2015); <sup>11</sup> Stephan et al. (2014); <sup>12</sup> Tullett, Wildschut, Sedikides, and Inzlicht (2015); <sup>13</sup> Zhou et al. (2008).