Received: 17 June 2022 | Accepted: 27 April 2023

DOI: 10.1002/jcpy.1359

RESEARCH ARTICLE

Identifying nostalgia in text: The development and validation of the nostalgia dictionary

Jia Chen[1] | **Kristin Layous**[2] | **Tim Wildschut**[3] | **Constantine Sedikides**[3]

[1]ShanghaiTech University, Shanghai, China

[2]California State University, East Bay, Hayward, California, USA

[3]University of Southampton, Southampton, UK

Correspondence
Jia Chen, School of Entrepreneurship and Management, ShanghaiTech University, 393 Huaxia Road, Shanghai 201210, China.
Email: chenjia2@shanghaitech.edu.cn

Funding information
Shanghai Pujiang Program, Grant/Award Number: 22PJC077; ShanghaiTech Start-up Fund

Abstract

Nostalgia is a prevalent emotion that confers psychological benefits and influences consumer behavior. We developed and validated the 98-word Nostalgia Dictionary to automatize the assessment of nostalgicity in narratives (e.g., customer reviews, social media). First, we created an initial wordlist by identifying the most frequently used words in nostalgia narratives and by relying on the nostalgia literature. Second, we finalized the dictionary by testing experimentally the expanded wordlist for its capacity to differentiate nostalgia from related emotions. Third, we validated the dictionary by demonstrating that it corresponds to self-reports and coder-ratings of nostalgia, produces result patterns expected by theory, and predicts favorability ratings of books and consumer experiences, even after adjusting for positive emotion words. We discuss the potential of the Nostalgia Dictionary to advance research and practice.

KEYWORDS

consumer behavior, consumer experiences, nostalgia, nostalgia dictionary, text mining

INTRODUCTION

Nostalgia is defined as "a sentimental longing or wistful affection for the past" (*The New Oxford Dictionary of English*, 1998, p. 1266). Engaging in nostalgic reflection involves contemplating self-relevant or meaningful experiences from one's life (Sedikides & Wildschut, 2018; Van Tilburg et al., 2018). Such experiences often encompass childhood memories or close relationships and represent momentous life events (e.g., birthdays, graduations, anniversaries) or cherished family and cultural traditions (e.g., Sunday lunches, Thanksgiving dinners, Christmas celebrations; Van Tilburg et al., 2019; Wildschut et al., 2006).

When nostalgizing, one feels content, warm, and happy, but with tinges of longing and sadness for the irrevocability of the valued events; as such, nostalgia is an ambivalent emotion (Frankenbach et al., 2021), but more positively than negatively toned (Leunissen et al., 2021; Sedikides & Wildschut, 2016). Importantly, nostalgia is a prevalent emotion. It is triggered by a variety of sources (e.g., music, song lyrics, smells, tastes, memories; Reid et al., 2015, 2022; Routledge et al., 2011), occurs frequently (e.g., several times a week; Hepper et al., 2021; Wildschut et al., 2006), and is experienced across age groups (Hepper et al., 2021; Madoglou et al., 2017) and cultures (Hepper et al., 2014; Wildschut et al., 2019).

Nostalgia is now recognized as a unique and prevalent emotion with far-reaching implications for psychological functioning. Our goal is to develop a comprehensive dictionary to effectively capture expressions of nostalgia in text. By so doing, we endeavor to expand the field's methodological arsenal for studying nostalgia's impact on consumers and, more broadly, society.

Nostalgia is important to consumer behavior

Evidence accumulated over the last two decades attests to the psychological benefits of nostalgia. For example, nostalgic (compared to control) participants report higher self-esteem (Evans et al., 2021; Hepper et al., 2012), authenticity (Baldwin et al., 2015; Kelley et al., 2022), optimism (Cheung et al., 2013, 2016), meaning in life (Abeyta &

Accepted by Grant Packard, Sarah Moore, and Jonah Berger, Editors; no Associate Editor for this special issue paper.

Pillarisetty, 2022; Sedikides & Wildschut, 2018), goal pursuit (Sedikides et al., 2018; Sedikides & Wildschut, 2023), self-continuity (i.e., a sense of connection between one's past and present; Sedikides, Wildschut, Routledge, & Arndt, 2015; Sedikides et al., 2016), and psychological well-being (Hepper & Dennis, 2023; Layous et al., 2022). Furthermore, nostalgia's impact extends to social relationships. It has been shown to foster social connectedness (i.e., a sense of acceptance and belongingness; Juhl & Biskas, 2023; Sedikides & Wildschut, 2019), social support (Lasaleta et al., 2021; Zhou et al., 2008), and empathy (Juhl et al., 2020; Zhou et al., 2012).

Importantly, although nostalgia is predominantly positively valenced (Leunissen et al., 2021), affective positivity does not explain all of its conferred benefits. When compared to other positive emotion elicitations (e.g., recalling a lucky event), a nostalgia induction produces similar amounts of positive affect, but greater creativity (Van Tilburg et al., 2015), inspiration (Stephan et al., 2015), authenticity (Stephan et al., 2012), and social connectedness (Sedikides et al., 2016), testifying to nostalgia's unique impact over and above general positive affect. These findings highlight the importance of exploring nostalgia specifically rather than relying on measurement tools that broadly capture positive affect.

Prior research has also documented that nostalgia influences attitudes, decision making, and behaviors across various contexts. For example, nostalgizing about a member of a social group improves attitudes toward the entire group (Turner et al., 2013, 2018, 2022). Likewise, nostalgizing about a specific group improves attitudes toward it (Smeekes, 2015; Wildschut et al., 2014). Additionally, nostalgia is key to brand bonding in the consumption domain (Brown et al., 2003), as people develop more favorable attitudes toward brands or products that evoke nostalgia (Muehling et al., 2014; Muehling & Sprott, 2004), and nostalgizing about an object elevates the favorability of attitudes toward it. This effect has been observed for various objects, including snacks (Chou & Lien, 2010), toothpaste (MacKenzie et al., 1986; Muehling et al., 2014), photographic film and cameras (Muehling & Pascal, 2011; Pascal et al., 2002), songs and TV programs (Dimitriadou et al., 2019), and food items (Lasaleta et al., 2021; Zhou et al., 2019). These findings demonstrate the pervasive influence of nostalgia on diverse consumption experiences.

Self-referencing theory (Gregg et al., 2017; Holbrook & Schindler, 2003; Sujan et al., 1993) provides an explanation. Nostalgia involves remembrance of bonding between the self and an object. As felt nostalgia for this self-object connection increases (e.g., through a nostalgic advertisement), favorable attitudes toward the object also increase. Notably, the effect of nostalgia on object preferences is independent of positive affect, object positivity, or positivity of past's association with the brand, again highlighting the unique relevance of nostalgia (Dimitriadou et al., 2019; Lasaleta et al., 2021; MacKenzie et al., 1986; Muehling et al., 2014; Zhou et al., 2019).

The influence of nostalgia can extend to other domains. For instance, when individuals experience nostalgia, they may diminish the significance of money, leading to a willingness to spend more on products (Lasaleta et al., 2014), or exhibit a greater propensity for donation (Zhou et al., 2012). Additionally, research has uncovered that the recollection of nostalgic memories can promote increased patience among consumers while waiting (Huang et al., 2016).

The evidence indicates that nostalgia is a unique and powerful emotion that influences various aspects of human experience, from psychological well-being to social connections and consumer behavior. It is important, then, to develop a comprehensive nostalgia dictionary that enables researchers and practitioners to more accurately identify and analyze expressions of nostalgia in text, with the ultimate aim of contributing to more effective interventions, marketing strategies, and therapeutic approaches.

The potential benefits of capturing text-based nostalgia

Due to the rapid expansion of the Internet and social media platforms, many self-expression narratives are available online. For example, social media users routinely write posts and reviews to register their feelings (e.g., nostalgia) and attitudes toward culinary experiences or other consumptions. Correspondingly, researchers have developed dictionaries, which can be applied to these texts in order to analyze the words that people use to express themselves (Hopp et al., 2021; Pennebaker et al., 2015; Pennebaker & King, 1999). Researchers have also discussed how to use automatic text analysis to answer consumer research questions (Humphreys & Wang, 2018), as well as the importance of these methods (Berger et al., 2020; Weber et al., 2018). For example, customer reviews that included words associated with authenticity-rated restaurants more favorably, even after controlling for restaurant quality (Kovács et al., 2014; see also: Opoku et al., 2006; Rocklage et al., 2018). In addition, independent, family-owned, and specialist (single-category) restaurants were perceived as more authentic (Kovács et al., 2014). The large amount of online texts creates a wealth of data, providing an opportunity to identify nostalgia and examine its relation with consumers' attitudes and behavior. However, due to the limited availability of tools to identify nostalgia in text, the impact of the emotion on consumer psychology and behavior remains relatively underexplored (but see Davalos et al., 2015, for identification of nostalgic phrases in social media). Given the prevalence and potency of nostalgia, a text-based analysis tool that can index the emotion in a broad range of contexts (i.e., a nostalgia dictionary) is needed.

A nostalgia dictionary can benefit researchers

A text-based tool that can analyze people's everyday expressions of nostalgia would provide valuable insight into the emotion. First, a nostalgia dictionary can be used to explore the generalizability of prior research findings. For instance, does the prevalence of text-based nostalgia differ across age, gender, and culture in a similar way to self-reported nostalgia? Second, a nostalgia dictionary can be implemented to explore the emotion longitudinally without requiring expensive and burdensome participant time. Researchers could examine social media posts over time to answer how nostalgia varies during different times of a day, in different days of a week, or in different months of a year. Third, researchers can use the nostalgia dictionary to expand understanding of the relations between nostalgia and other constructs. For example, past research has found that experimentally induced nostalgia feels more positive than negative (Leunissen et al., 2021), yet some authors have contended that everyday experiences of nostalgia are predominantly negative (Newman et al., 2020; but see Turner & Stanley, 2021). A nostalgia dictionary could help to analyze everyday expressions of nostalgia on social media to find out how often these expressions are related to positive and negative emotions.

A nostalgia dictionary can benefit practitioners

A text-based nostalgia tool would also be beneficial for practitioners. First, a nostalgia dictionary could be applied to product or service descriptions to have them rated automatically on nostalgicity (i.e., the potential to describe or elicit nostalgia). Hence, thousands of products (e.g., candy, shoes, magazines, shampoos) could receive a nostalgia score, and online retailer platforms (e.g., Amazon, eBay, Rakuten, Alibaba) could use that index as part of their recommendation system, that is, recommending the most or least nostalgic ones according to user preference. Similarly, a nostalgia dictionary could analyze social media posts, reviews, or online discussions of various products or consumption experiences (e.g., movies, eating, vacations, listening to music) to contribute to the recommendation engine or predict product evaluations. Second, a nostalgia dictionary could serve as a practical guide in evaluating product/service design or how well the company is advertising. For instance, a nostalgia dictionary could analyze advertisement content or people's reactions to advertisements to guide marketing teams that purport to create nostalgic campaigns. Additionally, marketers could track consumers' social media posts during the consumption experience to evaluate nostalgicity and adjust their campaign accordingly such as advertising specific parts of the experience that consumers found most nostalgic. Third, as nostalgia is a prevalent and potent emotion (Sedikides, Wildschut, Routledge, Arndt, et al., 2015; Wildschut & Sedikides, 2022a), detecting it can enhance the accuracy of personalized recommendation above and beyond simply knowing people's search and purchasing history. For example, by knowing specific products for which people have high nostalgicity, the recommendation engine can suggest products of a similar type, from a similar time period, or for a particular function. So, if someone expresses nostalgia in their customer review of Big League Chew (a shredded bubble gum meant to mimic chewing tobacco among baseball players), the recommendation engine may also suggest Pop Rocks (a candy popular during a similar time period) or baseball memorabilia (to capture a similar genre). In addition, if someone expresses nostalgia, they may also feel a desire to connect socially (Juhl & Biskas, 2023; Sedikides & Wildschut, 2019), and therefore, the recommendation engine could suggest products that foster social connection such as an interactive board game or endearing greeting cards. In all, a well-developed and validated nostalgia dictionary can be an important tool for researchers and practitioners alike.

Overview

We proceeded in four stages. Stage I (Creation of the Initial Wordlist for the Nostalgia Dictionary) comprised two steps. In the first step, we identified the most frequently used words that were embedded in nostalgia narratives provided by diverse samples including Amazon Mechanical Turk (MTurk) workers, undergraduate students in a university, and a university's community members. In the second step, we added words from the nostalgia literature that we deemed to be high in nostalgicity and invited experts to judge the words' relevance to the emotion. The outcome of this stage was an initial wordlist.

In Stage II (Refinement of the Nostalgia Dictionary), we explored different word combinations from the two abovementioned sources (i.e., nostalgia narratives, nostalgia literature) testing experimentally whether the Nostalgia Dictionary can distinguish the target emotion (i.e., nostalgia) from other pertinent emotions. We also ruled out alternative explanations and demonstrated the effectiveness of the dictionary. Importantly, the Nostalgia Dictionary results in a continuous score reflecting the nostalgicity in a piece of writing (vs. the dichotomous presence or absence approach introduced by Davalos et al., 2015). For evidence in favor of the continuous approach, see Cohen (1983) and DeCoster et al. (2009).

In Stage III (Validation and Application of the Nostalgia Dictionary), we validated the Nostalgia Dictionary by showing that it produces results (a) consistent with manually coded nostalgia and self-reported

nostalgia and (b) consistent with theoretical predictions regarding the role of nostalgia before and after the COVID-19 pandemic. Finally, in Stage IV (Application of the Nostalgia Dictionary), we tested the applicability of the Nostalgia Dictionary. In particular, we examined whether it predicts evaluations of books (i.e., Amazon book reviews) and consumption experiences (i.e., Yelp reviews).

We present supplementary materials about the development of the dictionary in Methodological Details Appendix (MDA; see Appendices A–I). The OSF link is: https://osf.io/tyxba/?view_only=e53e730ea1704f4fbe8e9cc7fc4c0156.

STAGE I. CREATION OF THE INITIAL WORDLIST FOR THE NOSTALGIA DICTIONARY

We relied on both nostalgia narratives and the literature for creating the initial wordlist. We started by compiling the most frequently used words from nostalgia narratives generated by various samples. We expanded on the ensuing list by identifying high-nostalgicity words from the applicable literature.

Compilation of wordlist from nostalgic narratives

In an effort to form the initial wordlist, we compiled the most frequently used words from nostalgia narratives across three samples. The first sample comprised MTurk workers (N=288; Chen, 2019). The second sample comprised undergraduates in a university (N=53; Cheung et al., 2013, Study 1). The third sample consisted of community members (N=435; Hepper et al., 2021, Study 1). The three samples (N=776; 469 women, 305 men, 2 unidentified) included individuals of varying ages (M_{age}=43.38 years, SD_{age}=18.69 years) and diverse occupations (e.g., students, office workers, financial managers). We provide additional demographic information (ethnicity, education, and income) for our samples in Appendices A–C (MDA). All participants completed part of the Event Reflection Task (Sedikides, Wildschut, Routledge, Arndt, et al., 2015; Wildschut et al., 2006). Specifically, they brought to mind a nostalgic event in their lives, described it in writing, and reported their felt nostalgia. In total, we collected 776 nostalgia narratives containing 35,504 words. We adopted text analysis in R (Silge & Robinson, 2017) to analyze the frequency of each word. First, we tokenized the narratives, storing each word independently. We excluded stop words (e.g., "the," "is," "of"), as they were irrelevant to our research objectives. Then, we changed all verbs to first-person present tense (e.g., "felt" to "feel," "walking" to "walk"), changed all nouns to their singular form (e.g., "memories" to "memory"), and fixed misspellings. After that, we counted word frequencies as a way to assess their nostalgicity.

The most frequent word was "Feel" (count=1060), and the next most frequent word was "Time" (count=881). "Happy" was #4 (count=417) and "Remember" was #7 (count=385). Also, "Nostalgic" was #10 (count=327) and "House" was #23 (count=152). "Miss" was #27 (count=135). The 100th most frequent word was "Remind" (count=28) (Table 1). At this point, we drew the line and decided to retain the Top 100 words in the initial wordlist. The rationale was that the mean frequency of words ranked #91 to #100 was higher than that of words ranked #101 to #110 (t=1.827, p=0.034, one-tailed). Furthermore, words beyond the 100th position (e.g., "Free," "Hold") had low relevance to nostalgia, based on a previous analysis of nostalgia's prototypical features (e.g., memories, relationships; Hepper et al., 2012, 2014).

Expansion of wordlist from nostalgia literature

To establish a comprehensive wordlist, we compiled nostalgic words from the nostalgia literature. We relied on three sources. The first one was the Nostalgia Inventory (Batcho, 1995) on which participants rate the extent to which they feel nostalgic for 20 objects (e.g., "vacations I went on," "heroes/heroines," "past TV shows, movies"). We excluded stop words, refined the 20 object labels (e.g., by using "vacations" instead of "vacations I went on"), and expanded on them (e.g., we broke down "past TV shows, movies" into four separate words). We ended up with 22 words (see Appendix D, MDA, for original objects and added keywords).

The second source was the Personal Nostalgia Scale (Marchegiani & Phau, 2013), typically used to assess nostalgia following exposure to advertisements. Participants rate a given advertisement on the extent to which it evokes six nostalgic objects (e.g., "good times from my past," "my childhood days," "memories of being a kid"). We derived words from each object. For example, we derived "memories" and "kid" from "memories of being a kid." Likewise, we derived "childhood" and "days" from "my childhood days." The result was the addition of eight words to our initial list (Appendix D, MDA).

The third source was the work of Hepper et al. (2012), which identified, through a prototype analysis, 18 central features and 17 peripheral features of the construct "nostalgia." We relied on these features and their exemplars (table 1 of Hepper et al., 2012) to derive additional nostalgia words. For example, in Hepper et al., the central feature "the past" was accompanied by the exemplars "past," "days gone by," and "old times." We derived "past," "days," "old," and "times." As before, we excluded stop words. We selected a total of 108 words (Appendix D, MDA).

We proceeded to retain the words' original format and remove duplicate words by integrating verbs with

TABLE 1 The Top 100 most frequently used words from nostalgia narratives.

Rank	Word	Frequency	Rank	Word	Frequency	Rank	Word	Frequency
1	Feel	1060	35	Ago	116	69	Month	70
2	Time	881	36	Brother	115	70	Share	68
3	Day	461	37	Summer	114	71	Hour	67
4	Happy	417	38	Close	109	72	Game	66
5	Life	397	39	Mother	104	73	Special	66
6	Family	392	40	Sit	99	74	Trip	66
7	Remember	385	41	Dad	99	75	Son	66
8	Friend	371	42	Feeling	98	76	Laugh	65
9	Experience	339	43	Christmas	96	77	Person	62
10	Nostalgic	327	44	Sister	95	78	Worry	61
11	Love	279	45	Watch	95	79	Party	59
12	Event	276	46	World	94	80	Future	57
13	Live	248	47	Husband	92	81	Excited	57
14	Memory	230	48	Stay	91	82	Longing	57
15	Child	226	49	Leave	91	83	Happen	57
16	Spend	209	50	Week	89	84	Cousin	56
17	Play	204	51	Sense	88	85	Eat	56
18	People	177	52	Grow	86	86	Married	54
19	Home	175	53	Daughter	86	87	Beautiful	54
20	Lot	173	54	Warm	84	88	Boy	51
21	Holiday	170	55	Night	84	89	Age	49
22	School	165	56	Nostalgia	82	90	Start	38
23	House	152	57	Childhood	82	91	Grandparent	34
24	Fun	144	58	Return	82	92	Train	33
25	Walk	137	59	Move	81	93	Mind	32
26	Enjoy	135	60	Talk	78	94	Excitement	31
27	Miss	135	61	Die	77	95	Wife	31
28	Past	131	62	Moment	76	96	Uncle	30
29	Sad	128	63	Recall	76	97	Morning	29
30	Parent	126	64	Travel	74	98	Pass	29
31	Bring	125	65	Smell	73	99	Lose	28
32	Visit	119	66	Wonderful	72	100	Remind	28
33	Meet	117	67	Beach	72			
34	Father	116	68	Change	70			

different tenses (e.g., "miss," "missed") and words in varied forms (e.g., "memory" and "memories"). This process reduced the number of words derived from the abovementioned three sources from 138 to 118. Among these 118 words, 32 words overlapped with the wordlist generated from nostalgic narratives in the previous step. Thus, we retained 86 unique words for further refinement by experts.

We then invited 10 academics with 8–20 years of expertise in the areas of emotion and nostalgia to assess the nostalgicity of the retained 86 words. These 10 experts were a convenience sample from our academic acquaintances and research collaborators. We asked them to read the instructions (Appendix E, MDA) and then rate how relevant each word is to nostalgia (1 = *not at all relevant*, 7 = *highly relevant*). We defined relevance in terms of three dimensions: (a) how close the semantic relation between a given word and nostalgia is, (b) how well each word captures the construct "nostalgia," and (c) how likely it is that a given word would appear in someone's written description of a nostalgic experience.

The experts produced consistent ratings across the 86 words (Cronbach's alpha = 0.95). We calculated the mean rating for each word as an indicator of its relevance to nostalgia (Appendix F, MDA). "Sentimental" was rated as the most relevant word ($M = 6.70$). The second highest rating was "fond" ($M = 6.60$). Other words of high relevance were "bittersweet" ($M = 6.50$),

TABLE 2 Comparisons between nostalgia and other emotions of 12 exemplar wordlists.

Words from prior literature	Most frequently used in nostalgic narratives	Total number of words in list	Nostalgia > comparator emotion: *p* values				Distinguish nostalgia from other conditions
			Control	Gratitude	Kindness	Pride	
Mean rating ≥ 4	Top 70	126	0.08	0.005	0.009	0.018	×
Mean rating ≥ 5	Top 70	110	0.16	0.008	0.028	0.043	×
Mean rating ≥ 6	Top 70	84	0.42	0.011	0.019	0.010	×
Mean rating ≥ 4	Top 60	116	0.10	0.006	0.013	0.031	×
Mean rating ≥ 5	Top 60	100	0.20	0.009	0.039	0.07	×
Mean rating ≥ 6	Top 60	74	0.50	0.014	0.028	0.020	×
Mean rating ≥ 4	Top 50	106	0.07	0.002	0.006	0.019	×
Mean rating ≥ 5	Top 50	90	0.16	0.003	0.020	0.050	×
Mean rating ≥ 6	Top 50	64	0.43	0.004	0.013	0.013	×
Mean rating ≥ 4	Top 40	96	0.047	<0.001	0.011	0.035	√
Mean rating ≥ 5	Top 40	80	0.12	0.002	0.037	0.09	×
Mean rating ≥ 6	Top 40	54	0.32	0.002	0.026	0.026	×

"reminisce" ($M = 6.30$), and "youth" ($M = 6.10$). We used the expert ratings as a reference for refining the wordlist in Stage II.

STAGE II. REFINEMENT OF NOSTALGIA DICTIONARY

In Stage I, we generated the initial wordlist by preserving the Top 100 most frequently used words from nostalgia narratives and 86 additional words from the nostalgia literature after removing the overlapping words. In Stage II, we refined these 186 words to create the Nostalgia Dictionary. An effective nostalgia dictionary should be able to differentiate nostalgia from similar emotions. Thus, we conducted an experiment, in Stage II, to identify the final wordlist that can clearly distinguish nostalgia from related, yet distinct, emotions.

We also compared our dictionary with an alternative nostalgia wordlist developed by Davalos et al. (2015). While examining the themes of nostalgic longing and nostalgic expressions in social media, these researchers also identified nostalgic phrases and words. They compiled 13 nostalgic phrases/words (e.g., "flashback," "down memory lane," "those were the days") and their highly associated words (e.g., "love," "life," "family") in Study 1 and identified top 20 phrases (e.g., "years ago," "good times," "middle school") in Study 2 from Facebook posts. To make the Davalos et al. (2015) dictionary comparable to ours, we tokenized their phrases, resulting in 73 words (e.g., "down memory lane" became "down," "memory," and "lane"; Appendix G, MDA). We then summed the frequency of each word, divided this sum by the total number of words in a narrative, and then multiplied the fraction by 100 to calculate a percentage of nostalgic words.

Identifying the most predictive wordlist

We selected five related emotions that share characteristics with nostalgia. Gratitude and pride are positive and self-relevant (Van Tilburg et al., 2018). Kindness is positive and interpersonal rather than self-relevant (Trew & Alden, 2015). Finally, one emotional state was neutral (i.e., ordinariness). We recruited 520 participants from Qualtrics Panels. We excluded 20 participants who provided meaningless answers and 13 who wrote only one word, resulting in 487 participants (251 women, 236 men). Their age ranged from 18 to 86 years ($M = 33.11$, SD = 16.88). We randomly assigned them to five conditions corresponding to the five emotions. We instructed them to bring to mind and write about an event from their lives that involved nostalgia ($n = 99$), gratitude ($n = 93$), pride ($n = 103$), kindness ($n = 91$), or ordinariness (i.e., regular event; $n = 101$). The writing task lasted for approximately 5 min (see Appendix H, MDA, for experimental instructions). We present in Appendix I (MDA) the exemplars of nostalgic narratives from this dataset as well as other datasets.

We employed a text mining approach to analyze the frequency of the 186 initial words for each narrative. We changed all verbs to first-person present tense, all nouns to their singular form, and fixed misspellings using the Natural Language Toolkit (Porter, 1980) in Python. We then used LIWC to search for the 186 words in these narratives and express the relative frequency of each word as a percentage (the frequency of the word divided by the total number of words in the given narrative, multiplied by 100).

As the initial wordlist was generated from two sources, nostalgia narratives and nostalgia literature (after removing the overlapping words), we explored different combinations of words from these two sources and examined their effectiveness in differentiating nostalgia from other conditions. Specifically, we systematically tested combinations of words derived from the nostalgia narratives

at various thresholds (e.g., Top 40, 50, 60, 70, 80, 90, and 100) and words derived from the nostalgia literature that received different expert ratings (e.g., higher than 4.00, 5.00, and 6.00). The nostalgia score was calculated as the percentage of words in a given narrative that were captured by the wordlist. We evaluated each permutation on two criteria. First, the wordlist should differentiate nostalgia from the comparator emotions. Second, if two or more word lists differentiate nostalgia from the comparator emotions, the wordlist with the greatest coverage (i.e., most words) should be preferred. We present the results of these analyses in Table 2. Based on these findings, we retained the Top 40 most frequently used words from the narratives and 56 words from the literature with a mean expert rating equal to or higher than 4.00. The Nostalgia Dictionary differentiated between nostalgia and similar emotions. Dunnett's post hoc tests showed that the nostalgia score was significantly higher in the nostalgia condition (M=16.15, SD=13.08) compared to the gratitude condition (M=9.68, SD=10.06), $t(482)=3.71$, $p<0.001$, kindness condition (M=10.90, SD=10.92), $t(482)=3.00$, $p=0.011$, pride condition (M=11.76, SD=11.98), $t(482)=2.58$, $p=0.035$, and ordinary condition (M=11.92, SD=13.75), $t(482)=2.48$, $p=0.047$.

In an effort to improve the Nostalgia Dictionary, we searched for words with low face validity. The wordlist contained some general words such as "lot" and "spend" and missed some words that are equivalent to included ones. For example, "brother" was in the wordlist; therefore, we added "sister." Analogously, "child" was in the wordlist; therefore, we added "kid" and "childhood." Additionally, Christmas is a common cultural tradition, celebrated officially or unofficially across the world (https://worldpopulationreview.com/country-rankings/countries-that-celebrate-christmas), which produces nostalgic memories (Van Tilburg et al., 2019; Wildschut et al., 2006), and it is a frequently used word when recalling nostalgic experience (#43). Hence, we also added "Christmas." In summary, we removed the general words "lot" and "spend" and introduced the words "sister," "kid," "childhood," and "Christmas." The final list contained 98 words (Table 3). Further, the final list distinguishes nostalgia from related emotions or an ordinary state. Specifically, the nostalgia score was significantly higher in the nostalgia condition (M=16.10, SD=12.80) relative to the gratitude (M=9.85, SD=10.57), $t(482)=3.59$, $p=0.001$, kindness (M=10.87, SD=10.91), $t(482)=2.99$, $p=0.011$, pride (M=11.81, SD=12.28), $t(482)=2.52$, $p=0.041$, or ordinary (M=11.67, SD=13.36) conditions, $t(482)=2.60$, $p=0.034$.

Ruling out alternative explanations

One possibility is that the higher nostalgia score in the nostalgia condition is driven by participants simply repeating the words in the instructions. Thus, we temporarily removed "nostalgic," "past," and "sentimental" from the Nostalgia Dictionary and re-ran our analyses. The nostalgia score remained significantly higher in the nostalgia condition (M=15.70, SD=12.38) compared to the gratitude (M=9.78, SD=10.56), $t(482)=3.42$, $p=0.002$, and kindness condition (M=10.83, SD=10.92), $t(482)=2.80$, $p=0.019$, and marginally higher than in the pride (M=11.81, SD=12.28), $t(482)=2.30$, $p=0.07$, and ordinary (M=11.66, SD=13.36) conditions, $t(482)=2.38$, $p=0.06$.

Another possibility is that the higher nostalgia score in the nostalgia condition is driven by positive emotion words. Among the words in the Nostalgia Dictionary, we identified 14 positive emotion words that also appear in the Linguistic Inquiry and Word Count 2022 positive emotion category (Boyd et al., 2022), such as "love," "pleasant," and "comfort." We temporarily removed these words from the Nostalgia Dictionary and re-ran the analyses. The nostalgia score remained significantly higher in the nostalgia condition (M=12.57, SD=10.68) compared to the gratitude (M=7.68, SD=8.41), $t(482)=3.99$, $p<0.001$, kindness (M=7.41, SD=5.94), $t(482)=4.20$, $p<0.001$, pride (M=7.73, SD=8.60), $t(482)=4.06$, $p<0.001$, or ordinary (M=8.45, SD=7.86) conditions, $t(482)=3.44$, $p=0.002$.

Comparison with the Davalos et al. (2015) wordlist

The nostalgia score generated from the wordlist by Davalos et al. (2015) was significantly higher in the nostalgia condition (M=16.13, SD=11.29) relative to the kindness (M=11.66, SD=8.15), $t(482)=3.05$, $p=0.009$, or ordinary (M=12.22, SD=9.35) conditions, $t(482)=2.74$, $p=0.023$. However, it did not distinguish the nostalgia condition from the pride (M=13.21, SD=10.38), $t(482)=2.06$, $p=0.13$, or the gratitude conditions (M=13.90, SD=10.98), $t(482)=1.53$, $p=0.35$.

STAGE III. VALIDATION OF THE NOSTALGIA DICTIONARY

In Stage I, we compiled the initial wordlist from nostalgia narratives generated from various samples and the extant nostalgia literature. In Stage II, we refined the resultant wordlist by exploring the different combination of words for their effectiveness in differentiating nostalgia from similar emotions and reviewing the list for face validity. This resulted in a final selection of 98 words. In Stage III, we assessed the validity of this wordlist.

Convergence with manually coded nostalgia and self-reported nostalgia

In their influential formulation of construct validity, Campbell and Fiske (1959) proposed that "validity is

TABLE 3 Final nostalgia dictionary.

No.	Word	No.	Word	No.	Word	No.	Word
1	Ago	26	Fond	51	Meet	76	Reminiscence
2	Back	27	Friend	52	Memory	77	Rose-tinted
3	Bittersweet	28	Fun	53	Miss	78	Sad
4	Bring	29	Funny	54	Mother	79	Sadness
5	Brother	30	Good	55	Movie	80	School
6	Calm	31	Happiness	56	Music	81	Security
7	Child	32	Happy	57	Nostalgic	82	Sentimental
8	Childhood	33	Heart	58	Old	83	Sister
9	Christmas	34	Holiday	59	Parent	84	Sit
10	Close	35	Home	60	Past	85	Smile
11	Comfort	36	Home-missing	61	Peaceful	86	Summer
12	Contemplate	37	Homesick	62	People	87	Think
13	Day	38	Homesickness	63	Personal	88	Time
14	Daydream	39	House	64	Pet	89	Toy
15	Desire	40	Idealized	65	Photo	90	Vacation
16	Dream	41	Immerse	66	Place	91	Value
17	Dwell	42	Introspect	67	Play	92	Visit
18	Emotion	43	Keepsake	68	Pleasant	93	Walk
19	Enjoy	44	Kid	69	Positive	94	Wish
20	Event	45	Life	70	Relationship	95	Wishful
21	Experience	46	Live	71	Relaxed	96	Yearn
22	Familiar	47	Loneliness	72	Relive	97	Young
23	Family	48	Lonely	73	Remember	98	Youth
24	Father	49	Loss	74	Reminder		
25	Feel	50	Love	75	Reminisce		

TABLE 4 Difference between nostalgia and ordinary-event control condition on three indices of nostalgia.

	Ordinary event		Nostalgic event				
	M	SD	*M*	SD	*t*	*p*	η^2
Self-reported nostalgia	3.41	1.61	5.24	0.85	14.48	<0.001	0.35
Manually coded nostalgia	1.44	0.58	3.32	0.87	24.77	<0.001	0.61
Nostalgia Dictionary score	7.45	4.72	13.27	6.24	10.25	<0.001	0.21

represented in the agreement between two attempts to measure the same trait through maximally different methods" (p. 83). Accordingly, to establish convergent validity of the Nostalgia Dictionary, we examined its correlation with manually coded and self-reported nostalgia. We recruited 400 US-based participants from Prolific. We excluded seven participants who provided meaningless answers, resulting in a final $N=393$ (206 men, 178 women, 9 unidentified). Participants' age ranged from 18 to 71 years ($M=33.79$, SD = 10.35). We randomly assigned participants to the nostalgia or control condition, asking them to write about a nostalgic or ordinary event from their past (i.e., the Event Reflection Task; Sedikides, Wildschut, Routledge, Arndt, et al., 2015; Wildschut et al., 2006). Next, they completed a 3-item manipulation check, assessing how nostalgic they felt (e.g., "Right now, I am feeling quite nostalgic"; 1 = *strongly disagree*, 6 = *strongly agree*; Wildschut et al., 2006). We averaged these items to index self-reported nostalgia ($\alpha=0.99$, $M=4.41$, SD = 1.55). To index manually coded nostalgia, we enlisted three coders instructing them to rate the degree of nostalgia that participants expressed in the narratives. As part of their training, the coders received the Oxford Dictionary definition of nostalgia ("a sentimental longing or wistful affection for the past") and coding examples. Next, they read each narrative and rated the degree of nostalgia the participant was feeling at the moment (1 = *not nostalgic at all*, 5 = *very nostalgic*). We averaged the three coders' ratings ($\alpha=0.87$, $M=2.47$, SD = 1.20). To index computer-coded nostalgia, we applied the Nostalgia Dictionary to the narratives.

As a preliminary step, we compared the nostalgia and control conditions in terms of the three abovementioned indices of nostalgia (Table 4). Participants who recalled and wrote about a nostalgic event reported feeling significantly more nostalgic than those who recalled and wrote about an ordinary event (self-reported nostalgia). Further, human coders rated the nostalgic narratives as significantly more nostalgic than the ordinary-event narratives (manually coded nostalgia). Finally, the nostalgia score was significantly higher for nostalgic narratives than for ordinary-event narratives (Nostalgia Dictionary). The latter finding suggests that the nostalgia score generated by our dictionary may serve as an unobtrusive manipulation check in studies that induce the emotion via vivid autobiographical writing.

In support of the convergent validity of the Nostalgia Dictionary, the nostalgia score was positively correlated with both self-reported nostalgia $r(391)=0.37$, $p<0.001$, and manually coded nostalgia, $r(391)=0.42$, $p<0.001$. Importantly, the dictionary developed by Davalos et al. (2015) did not relate to self-reported and manually rated nostalgia as strongly as the Nostalgia Dictionary. Specifically, the correlation between the score generated by Davalos et al. (2015) and self-reported nostalgia was $r(391)=0.20$, $p<0.001$, whereas the correlation between the Davalos et al. score and manually rated nostalgia was $r(391)=0.24$, $p<0.001$. The correlations of the Nostalgia Dictionary score were significantly higher than the correlations of the Davalos et al. (2015) dictionary score: in the case of self-reported nostalgia, $z=3.85$, 95% CI [0.084, 0.257], $p<0.001$; in the case of manually rated nostalgia, $z=3.97$, 95% CI [0.088, 0.258], $p<0.001$ (Hittner et al., 2003; Zou, 2007). Taken together, the nostalgia score generated by the Nostalgia Dictionary converged with self-reported nostalgia and manual ratings, attesting to its validity.

Comparing nostalgia before and during the COVID-19 pandemic

Cronbach and Meehl (1955) offered another formulation of construct validity. They wrote: "Construct validation takes place when an investigator believes that his instrument reflects a particular construct, to which are attached certain meanings. The proposed interpretation generates specific testable hypotheses, which are a means of confirming or disconfirming the claim" (p. 290). Thus, another way to validate our dictionary is to formulate a testable hypothesis concerning nostalgia and assess it with the Nostalgia Dictionary. Confirmation of the hypothesis constitutes construct validation of the dictionary.

We formulated and tested the hypothesis that nostalgia would have been higher during the COVID-19 pandemic than pre-COVID-19. When people feel lonely or socially disconnected, they bring to mind nostalgic memories (Wildschut et al., 2006, 2010; Zhou et al., 2008, 2022). Nostalgic memories, in turn, increase social connectedness, thereby countering loneliness and social isolation (Abeyta et al., 2020; Wildschut & Sedikides, 2022b, 2022c). Due to the widespread transmission of COVID-19, governments instituted lockdown policies for much of 2020 and into 2021. People practiced social distancing to prevent being infected and often felt lonely or socially disconnected (Armitage & Nellums, 2020; Enea et al., 2021; Wildschut & Sedikides, 2023). Loneliness and social disconnection, in turn, would have elevated nostalgia during the pandemic (compared to before). Indeed, reduced social contact during COVID predicted increased loneliness which, in turn, was associated with higher consumption of nostalgic music (Huang et al., 2023).

To test this hypothesis, we examined a large corpus of stories about the past, which were written before and during the pandemic (the CoSoWELL corpus; Kyröläinen et al., 2022). Participants were 1028 US- and Canada-based older adults recruited on MTurk and Prolific (1242 women, 573 men, 3 others, and 3 unidentified). Their age ranged from 55 to 83 years ($M=62.85$, $SD=5.26$). The pre-COVID phase spanned from March 1, 2019, to June 30, 2019, whereas the COVID phase comprised four distinct periods, (a) April 8, 2020, to June 16, 2020, (b) June 17, 2020, to June 30, 2020, (c) Oct 14, 2020, to Nov 5, 2020, and (d) Jan 12, 2021, to Feb 15, 2021. Participants were instructed to "write a story about a significant life event that occurred in your distant past." There were 1821 stories in total, and we applied the Nostalgia Dictionary to calculate a nostalgia score for each.

We hypothesized that stories about the past would contain more expressions of nostalgia when written during (than before) the pandemic. To test this hypothesis, we conducted a hierarchical linear modeling (HLM) analysis, treating participants as level-2 units of analysis and stories as level-1 units of analysis. Time period (pre-COVID vs. during COVID) was a categorical level-1 predictor. We included a random intercept for participants to account for the fact that they furnished multiple stories, and hence, stories were not independent observations. We used a general Satterthwaite approximation to calculate degrees of freedom and conducted the HLM analyses in SAS Proc Mixed. As hypothesized, the nostalgia score was significantly higher during the pandemic ($M=6.45$, $SE=0.09$) than before the pandemic ($M=6.09$, $SE=0.16$), $\gamma=0.36$, $SE=0.18$, $t(1024)=2.01$, $p=0.045$. These results provide additional construct validation for the Nostalgia Dictionary.

STAGE IV: APPLICATION OF THE NOSTALGIA DICTIONARY

Researchers have typically manipulated nostalgia with experimental instructions, such as nostalgic (vs.

neutral) advertisements. Relevant work documented that nostalgia can strengthen brand and product attitudes (Merchant & Rose, 2013; Muehling et al., 2014; Muehling & Pascal, 2011, 2012). For example, compared to non-nostalgic advertisements, nostalgic advertisements elicit more nostalgia-related thoughts and more favorable brand attitudes (Muehling & Sprott, 2004). Accordingly, we propose that if a consumption experience renders consumers nostalgic, then consumers will generate more positive brand or product attitudes, reflected by a higher rating on reviews. The text analysis approach that we developed offers a novel method to identify the degree of nostalgia that reviewers felt during consumption, as expressed in their reviews. Hence, we reasoned that the Nostalgia Dictionary could predict customers' evaluations of their consumption experiences. Specifically, we expected a positive association between Nostalgia Dictionary scores and customer evaluations.

The nostalgia dictionary predicts Amazon book review ratings

We hypothesized that, if a book evokes nostalgia, readers will evaluate it more positively. To test this hypothesis, we applied the Nostalgia Dictionary to book reviews and examined the correlation between the resultant nostalgia score and readers' book ratings. We collected 28,355 book reviews and ratings of 457 books from Amazon Review Data (Ni et al., 2019). Ratings were in the form of number of stars, from 1 to 5. We applied the Nostalgia Dictionary to generate a nostalgia score for each review. A substantial proportion of reviews (70.28%) contained words from the Nostalgia Dictionary. Notably, even after removing positive emotion words from the dictionary, 52.00% of reviews still contained nostalgic words. As in the other analyses, the nostalgia score was the sum of word frequencies divided by the number of words and then multiplied by 100. Results revealed a positive correlation between the nostalgia score and book ratings, $r(28{,}353) = 0.145$, $p < 0.001$.

Furthermore, the Nostalgia Dictionary significantly outperformed the wordlist generated from Davalos et al. (2015). Specifically, the positive correlation generated from our nostalgia score was higher than the score generated from Davalos et al. (2015), $r(28{,}353) = 0.028$, $p < 0.001$. The difference between the correlations was significant, $z = 13.94$, 95% CI [0.101, 0.134], $p < 0.001$ (Hittner et al., 2003; Zou, 2007).

In a robustness analysis, we controlled for positive emotional content. Specifically, we temporarily removed from the Nostalgia Dictionary those positive emotion words that are also included in the LIWC positive-emotion category. By so doing, we removed overlap between the Nostalgia Dictionary and the LIWC positive-emotion category. Next, we regressed book ratings on the nostalgia score and the LIWC positive-emotion score. The LIWC-positive emotion score significantly predicted book ratings, $\beta = 0.18$, $t(28{,}352) = 30.61$, $p < 0.001$. Importantly, the nostalgia score uniquely predicted book ratings above and beyond the LIWC positive-emotion score, $\beta = 0.09$, $t(28{,}352) = 15.68$, $p < 0.001$. This indicates that the dictionary's predictive value for favorability ratings is not simply driven by positive emotions. All results for Amazon book reviews held when we included books as a fixed effect. We adopted a fixed-effects approach to clustering to control for the possibility that the same book might receive multiple reviews and, hence, reviews were not independent observations.

The nostalgia dictionary predicts Yelp review ratings

We applied the Nostalgia Dictionary to 907,282 reviews posted on yelp.com in 2019 from Yelp Open Dataset (https://www.yelp.com/dataset) and calculated the nostalgia score for each review. As above, the nostalgia score was the sum of word frequencies divided by the number of words and then multiplied by 100. A large proportion of reviews, 91.42%, contained nostalgia-related words, and even after removing positive words from the dictionary, 82.70% of reviews included nostalgia-related words. On Yelp, consumers evaluated their consumption experiences (i.e., dining experiences, massage services, hotels) with stars, ranging from one to five. The higher the number of stars, the more positive the customer evaluation. We computed the correlation between the nostalgia score and the evaluation of the consumption experience (i.e., number of stars). The nostalgia score was positively related to product evaluation, $r(907{,}280) = 0.210$, $p < 0.001$.

The positive correlation generated from our nostalgia score was slightly higher than the scores generated from Davalos et al. (2015), $r(907{,}280) = 0.202$, $p < 0.001$. The difference was small in numerical terms, yet statistically significant, $z = 8.02$, 95% CI [0.006, 0.009], $p < 0.001$ (Hittner et al., 2003; Zou, 2007).

As we did in the analysis of Amazon book reviews, we controlled for positive emotional content by temporarily removing from the Nostalgia Dictionary those positive emotion words that were included in the LIWC positive-emotion category. The LIWC-positive emotion score significantly predicted product evaluations, $\beta = 0.40$, $t(907{,}279) = 413.23$, $p < 0.001$. Critically, the nostalgia score uniquely predicted product evaluations above and beyond the LIWC positive-emotion score, $\beta = 0.04$, $t(907{,}279) = 44.65$, $p < 0.001$. All results for Yelp reviews held after we included the month of the reviews and 101,959 unique stores (i.e., restaurants, hair salons, message services) as fixed effects.

DISCUSSION

Nostalgia is a prevalent emotion that confers psychological benefits to individuals and, correspondingly, influences consumer behavior. Despite the relevance of nostalgia for individuals and industry, until now there has been no well-developed text-based tool to identify nostalgicity in the troves of online narratives about products or services (e.g., on social media or in online customer reviews). To address this issue, we developed the 98-word Nostalgia Dictionary. Specifically, we gathered the most frequently used words in nostalgia narratives from several sources (i.e., MTurk workers, undergraduates in a university, community members) and also drew upon words from the nostalgia literature. We then refined the dictionary by exploring its ability to differentiate narratives about nostalgic experiences from narratives about other similar yet distinct experiences (e.g., gratitude, pride, kindness) and retaining a list that optimized differences between experiences.

Next, we validated the Nostalgia Dictionary by demonstrating that dictionary-generated nostalgia scores (a) were higher in narratives about nostalgic than ordinary experiences, (b) were positively correlated with self-reported and manually coded nostalgia, (c) followed a results pattern hypothesized by the extant nostalgia literature (i.e., nostalgia was higher in past stories told during than before the pandemic), and (d) were positively correlated with favorability ratings of books and consumption experiences. Furthermore, we compared the Nostalgia Dictionary's predictive value to a nostalgia wordlist generated from Davalos et al. (2015) and found that our dictionary generally outperformed theirs. Finally, we verified that the Nostalgia Dictionary's predictive value was not only due to its inclusion of positive emotion words; that is, the Nostalgia Dictionary without positive emotion words still differentiated nostalgia narratives from other types of narratives and predicted favorability ratings. As other research has suggested (Dimitriadou et al., 2019; Lasaleta et al., 2021; MacKenzie et al., 1986; Muehling et al., 2014; Zhou et al., 2019), nostalgia uniquely predicts preference for products or experiences over and above general positive affect, and thus, a text-based tool to capture nostalgicity specifically is useful.

Usefulness of the nostalgia dictionary

Given that the Nostalgia Dictionary can differentiate nostalgia from other relevant constructs (e.g., gratitude, pride), it can be used in research to address the unique relation between nostalgia and other constructs, enhancing researchers' knowledge about the construct of nostalgia. For example, correlating scores on the Nostalgia Dictionary to the presence of other types of words (e.g., first-person singular ["I"], first-person plural ["We"]) may help to further characterize nostalgic experiences, that is, whether nostalgicity is couched within narratives primarily about the self or more so a social group. Importantly, the Nostalgia Dictionary can be applied to a variety of texts (e.g., online customer reviews, social media posts), making it a useful and noninvasive tool for a variety of research questions. As previously mentioned, a current proposal within the nostalgia literature is that everyday expressions of nostalgia (e.g., on social media) are more negative than experimentally elicited expressions of nostalgia (Newman et al., 2020; but see Turner & Stanley, 2021). The Nostalgia Dictionary could be applied to a variety of online "everyday" expressions of nostalgia to provide evidence regarding the proximal affective character of everyday nostalgia in an ecologically valid manner. Alternatively, if nostalgia is not the focal emotion of a given study, the Nostalgia Dictionary can be applied to identify the degree of nostalgia and be included as a covariate to tease nostalgia apart from related emotions.

The Nostalgia Dictionary can also be a useful tool for practitioners. For example, marketing departments could apply it to online customer reviews or social media posts to evaluate the nostalgicity of their product or service versus others, as well as to explore what characteristics of products or services (e.g., length of ownership, family-owned; Kovács et al., 2014) relate to higher nostalgicity. Then, if businesses want to increase the nostalgicity of their customers when interacting with their product or service, they could emphasize those characteristics that predicted higher nostalgicity. Similarly, practitioners could qualitatively evaluate customer reviews higher in nostalgicity to understand what aspects of their consumption experience made consumers particularly nostalgic (e.g., answering the question, "when people felt nostalgia for their product or service, what was driving that?"). In addition, online marketplaces like Amazon could use real-time expressions of nostalgia in customer reviews to inform their recommendation engines—suggesting products popular during a similar time period, from a similar genre, or that fulfill a typical function of nostalgia (e.g., social connectedness).

Strengths, limitations, and future directions

Our dictionary development process had various strengths like using both empirical and theoretical means to develop our initial wordlist and ensuring the wordlist differentiated nostalgia from related constructs (e.g., pride, gratitude). We also ruled out alternative explanations for the predictive value of the Nostalgia Dictionary, such as removing words from the Nostalgia Dictionary that were included in nostalgia induction instructions and removing positive emotion words to ensure nostalgia was uniquely predictive of book and consumption experience ratings.

Each decision in the development process likely has pros and cons. For example, we prioritized words that distinguished nostalgia from related constructs, but left out words that represent nostalgia but also represent other constructs (e.g., warm, recall, wonderful). Just because nostalgia shares commonality with other emotions (e.g., pride, gratitude) does not make that shared emotionality any less nostalgic. Thus, by eliminating words that represent various types of emotional experiences (not just nostalgia), we may have restricted our ability to detect nostalgicity. That is, the Nostalgia Dictionary may yield lower scores on nostalgicity than would be the case if we did not refine the dictionary in this way.

Moreover, when developing our initial wordlist, we tokenized narratives, exploring the frequency of individual words rather than phrases. Although straightforward, this practice takes each word out of context and could assign unwarranted nostalgic meaning. For example, the word "pet" is in our final dictionary, even though a pet could have been mentioned as part of an ordinary memory (e.g., I took my pet to the veterinarian today) or as part of a nostalgic one (e.g., my favorite childhood pet was…). Alternatively, Davalos et al. (2015) prioritized phrases (e.g., "down memory lane"), which has the advantage of providing context, but the disadvantage of potentially missing nostalgic expression that does not employ common phrases. Here, we tokenized the Davalos et al.'s phrases to make their approach comparable to ours, but future research could also compare the two approaches to manual narrative coding to examine which one most accurately categorizes a piece of writing as nostalgic. Importantly, the Nostalgia Dictionary was designed to provide a continuous score, whereas Davalos et al. identified presence or absence of nostalgia; as such, future research would need to identify a threshold score on the Nostalgia Dictionary that would be considered "presence" to compare to Davalos et al. That said, we regard the continuous nostalgicity score provided by our Nostalgia Dictionary as a strength (Cohen, 1983; DeCoster et al., 2009).

We validated our Nostalgia Dictionary in various ways (e.g., by relating to self-reports and manual coding, by exploring scores across experimental conditions, by testing theory-driven hypotheses), but one of those ways—predicting book and customer experience reviews—is open to further interpretation. Specifically, because our results are correlational and cross-sectional (narrative reviews and favorability ratings were collected at the same time), it is possible that consumers felt generally positively about the book or experience and this positivity led them to write nostalgically about it, rather than nostalgicity driving favorability ratings. Future research could employ experimental methods to manipulate the nostalgicity in a restaurant experience or book in order to test whether nostalgicity causes differences in favorability. Of course, even if nostalgicity drove favorability ratings, this does not negate the possibility that favorability also breeds nostalgia in a virtuous cycle. In lagged analyses, future researchers might be able to track this virtuous cycle by exploring customer favorability ratings and nostalgic expression (using the Nostalgia Dictionary) over time to find out if they build upon each other or if one (nostalgia or favorability) often precedes the other.

The lexical categories in the Nostalgia Dictionary may provide additional suggestions for future research. Notably, over one quarter (i.e., more than 25%) of the dictionary consists of emotion-related terms, including positive affect (e.g., happy, fond, relaxed), negative affect (e.g., lonely, sad, loss), and mixed feelings (e.g., bittersweet). Additionally, a significant number of words (i.e., 21) refer to places, events, or experiences that evoke nostalgia, such as holidays (e.g., Christmas), locations (e.g., school, home, house), and various triggers (e.g., music, photo, movie, summer, vacation). A further 13 words relate to relationships, encompassing family (e.g., father, mother, brother, sister), friends (e.g., friend), and other entities (e.g., pet, toy). Six words pertain to temporality (i.e., time, day, ago, old), with the remainder describing the nostalgic experience in terms of verbs (i.e., remember, feel) and adjectives (i.e., personal, young). Although these words may appear broad, their coupling with emotion-related or experience-related categories enables a comprehensive depiction of nostalgic experiences. Whereas we validated the overall score derived from the Nostalgia Dictionary, future research could examine the dictionary's dimensionality. That is, do some of the aforementioned lexical categories constitute discrete factors (e.g., might there be separate "relationships" and "positive affect" factors), and how might such factors be interrelated (e.g., would the "relationships" and "positive affect" factors be positively correlated)? Can the dictionary's prognostic power be strengthened by partitioning the overall score into such separate facets or would this sap its predictive strength? These are just some of the questions that await empirical scrutiny.

CONCLUSION

Given nostalgia's prevalence and importance to individuals and consumer behavior, we developed the Nostalgia Dictionary aiming to automatize the assessment of nostalgicity in narratives (e.g., customer reviews, social media). We developed it through empirical and theoretical means and validated it in multiple ways. We expect that the Nostalgia Dictionary will help researchers to deepen their study of nostalgia and will help practitioners better understand and position their products as well as make improved, personalized recommendations to consumers.

ACKNOWLEDGMENTS

We appreciate the editor and the review team for their constructive and insightful suggestions.

FUNDING INFORMATION

This work was sponsored by Shanghai Pujiang Program [grant number 22PJC077] and ShanghaiTech Start-up Fund.

ORCID

Jia Chen https://orcid.org/0000-0001-9398-9468

REFERENCES

Abeyta, A. A., & Pillarisetty, S. (2022). Nostalgia supports a meaningful life. *Current Opinion in Psychology*, *49*, 101520. https://doi.org/10.1016/j.copsyc.2022.101520

Abeyta, A. A., Routledge, C., & Kaslon, S. (2020). Combatting loneliness with nostalgia: Nostalgic feelings attenuate negative thoughts and motivations associated with loneliness. *Frontiers in Psychology*, *11*, 1219. https://doi.org/10.3389/fpsyg.2020.01219

Armitage, R., & Nellums, L. B. (2020). COVID-19 and the consequences of isolating the elderly. *The Lancet: Public Health*, *5*(5), E256. https://doi.org/10.1016/S2468-2667(20)30061-X

Baldwin, M., Biernat, M., & Landau, M. J. (2015). Remembering the real me: Nostalgia offers a window to the intrinsic self. *Journal of Personality and Social Psychology*, *108*(1), 128–147. https://doi.org/10.1037/a0038033

Batcho, K. I. (1995). Nostalgia: A psychological perspective. *Perceptual and Motor Skills*, *80*(1), 131–143. https://doi.org/10.2466/pms.1995.80.1.131

Berger, L., Humphreys, A., Ludwig, S., Moe, W. W., Netzer, O., & Schweidel, D. A. (2020). Uniting the tribes: Using text for marketing insight. *Journal of Marketing*, *84*(1), 1–25. https://doi.org/10.1177/0022242919873106

Boyd, R. L., Ashokkumar, A., Seraj, S., & Pennebaker, J. W. (2022). *The development and psychometric properties of LIWC-22*. University of Texas at Austin. https://www.liwc.app

Brown, S., Kozinets, R. V., & Sherry, J. F., Jr. (2003). Teaching old brands new tricks: Retro branding and the revival of brand meaning. *Journal of Marketing*, *67*, 19–33. https://doi.org/10.1509/jmkg.67.3.19.18657

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, *56*(2), 81–105. https://doi.org/10.1037/h0046016

Chen, J. (2019). *Unpublished data*. University of Illinois at Chicago.

Cheung, W. Y., Sedikides, C., & Wildschut, T. (2016). Induced nostalgia increases optimism (via social connectedness and self-esteem) among individuals high, but not low, in trait nostalgia. *Personality and Individual Differences*, *90*, 283–288. https://doi.org/10.1016/j.paid.20215.11.028

Cheung, W.-Y., Wildschut, T., Sedikides, C., Hepper, E. G., Arndt, J., & Vingerhoets, A. J. J. M. (2013). Back to the future: Nostalgia increases optimism. *Personality and Social Psychology Bulletin*, *39*(11), 1484–1496. https://doi.org/10.1177/0146167213499187

Chou, H.-Y., & Lien, N.-H. (2010). Advertising effects of songs' nostalgia and lyrics' relevance. *Asia Pacific Journal of Marketing and Logistics*, *22*(3), 314–329. https://doi.org/10.1108/13555851011062278

Cohen, J. (1983). The cost of dichotomization. *Applied Psychological Measurement*, *7*(3), 249–253. https://doi.org/10.1177/014662168300700301

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, *52*(4), 281–302. https://doi.org/10.1037/h0040957

Davalos, S., Merchant, A., Rose, G. M., Lessley, B. J., & Teredesai, A. M. (2015). 'The good old days': An examination of nostalgia in Facebook posts. *International Journal of Human-Computer Studies*, *83*, 83–93. https://doi.org/10.1016/j.ijhcs.2015.05.009

DeCoster, J., Iselin, A. M. R., & Gallucci, M. (2009). A conceptual and empirical examination of justifications for dichotomization. *Psychological Methods*, *14*(4), 349–366. https://doi.org/10.1037/a0016956

Dimitriadou, M., Maciejovsky, B., Wildschut, T., & Sedikides, C. (2019). Collective nostalgia and domestic country bias. *Journal of Experimental Psychology: Applied*, *25*(3), 445–457. https://doi.org/10.1037/xap0000209

Enea, V., Eisenbeck, N., Petrescu, T. C., & Carreno, D. F. (2021). Perceived impact of quarantine on loneliness, death obsession, and preoccupation with God: Predictors of increased fear of COVID-19. *Frontiers in Psychology*, *12*, 643977. https://doi.org/10.3389/fpsyg.2021.643977

Evans, N. D., Reyes, J., Wildschut, T., Sedikides, C., & Fetterman, A. K. (2021). Mental transportation mediates nostalgia's psychological benefits. *Cognition and Emotion*, *35*(1), 84–95. https://doi.org/10.1080/02699931.2020.1806788

Frankenbach, J., Wildschut, T., Juhl, J., & Sedikides, C. (2021). Does neuroticism disrupt the psychological benefits of nostalgia? A meta-analytic test. *European Journal of Personality*, *35*(2), 249–266. https://doi.org/10.1080/10.1002/per.2276

Gregg, A. P., Mahadevan, N., & Sedikides, C. (2017). The SPOT effect: People spontaneously prefer their own theories. *The Quarterly Journal of Experimental Psychology*, *70*(6), 996–1010. https://doi.org/10.1080/17470218.2015.1099162

Hepper, E. G., & Dennis, A. (2023). From rosy past to happy and flourishing present: Nostalgia as a resource for hedonic and eudaimonic wellbeing. *Current Opinion in Psychology*, *49*, 101547. https://doi.org/10.1016/j.copsyc.2022.101547

Hepper, E. G., Ritchie, T. D., Sedikides, C., & Wildschut, T. (2012). Odyssey's end: Lay conceptions of nostalgia reflect its original Homeric meaning. *Emotion*, *12*(1), 102–119. https://doi.org/10.1037/a0025167

Hepper, E. G., Wildschut, T., Sedikides, C., Ritchie, T. D., Yung, Y.-F., Hansen, N., Abakoumkin, G., Arikan, G., Cisek, S. Z., Demassosso, D. B., Gebauer, J. E., Gerber, J. P., González, R., Kusumi, T., Misra, G., Rusu, M., Ryan, O., Stephan, E., Vingerhoets, A. J., & Zhou, X. (2014). Pancultural nostalgia: Prototypical conceptions across cultures. *Emotion*, *14*(4), 733–747. https://doi.org/10.1037/a0036790

Hepper, E. G., Wildschut, T., Sedikides, C., Robertson, S., & Routledge, C. D. (2021). The time capsule: Nostalgia shields wellbeing from limited time horizons. *Emotion*, *21*(3), 644–664. https://doi.org/10.1037/emo0000728

Hittner, J. B., May, K., & Silver, N. C. (2003). A Monte Carlo evaluation of tests for comparing dependent correlations. *The Journal of General Psychology*, *130*(2), 149–168. https://doi.org/10.1080/00221300309601282

Holbrook, M. B., & Schindler, R. M. (2003). Nostalgic bonding: Exploring role of nostalgia in the consumption experience. *Journal of Consumer Behavior*, *3*(2), 107–127. https://doi.org/10.1002/mar.10074

Hopp, F. R., Fisher, J. T., Cornell, D., Huskey, R., & Weber, R. (2021). The extended Moral Foundations Dictionary (eMFD): Development and applications of a crowd-sourced approach to extracting moral intuitions from text. *Behavior Research Methods*, *53*, 232–246. https://doi.org/10.3758/s13428-020-01433-0

Huang, K.-J., Chang, Y.-H., & Landau, M. J. (2023). *Pandemic nostalgia: Reduced social contact predicts consumption of nostalgic music during the COVID-19 pandemic*. Social Psychological and Personality Science. Advance online publication. https://doi.org/10.1177/19485506221149463

Huang, X., Huang, Z., & Wyer, R. S., Jr. (2016). Slowing down in the good old days: The effect of nostalgia on consumer patience. *Journal of Consumer Research*, *43*(3), 372–387. https://doi.org/10.1093/jcr/ucw033

Humphreys, A., & Wang, R. J. H. (2018). Automated text analysis for consumer research. *Journal of Consumer Research*, *44*(6), 1274–1306. https://doi.org/10.1093/jcr/ucx104

Juhl, J., & Biskas, M. (2023). Nostalgia: An impactful social emotion. *Current Opinion in Psychology*, *49*, 101545. https://doi.org/10.1016/j.copsyc.2022.101545

Juhl, J., Wildschut, T., Sedikides, C., Diebel, T., Cheung, W. Y., & Vingerhoets, A. J. J. M. (2020). Nostalgia proneness and empathy: Generality, underlying mechanism, and implications for prosocial behavior. *Journal of Personality*, *88*(3), 485–500. https://doi.org/10.1111/jopy.12505

Kelley, N. J., Davis, W. E., Dang, J., Liu, L., Wildschut, T., & Sedikides, C. (2022). Nostalgia confers psychological wellbeing by increasing authenticity. *Journal of Experimental Social Psychology*, *102*, 104379. https://doi.org/10.1016/j.jesp.2022.104379

Kovács, B., Carroll, G. R., & Lehman, D. W. (2014). Authenticity and consumer value ratings: Empirical tests from the restaurant domain. *Organization Science*, *25*(2), 458–478. https://doi.org/10.1287/orsc.2013.0843

Kyröläinen, A.-J., Gillett, J., Karabin, M., Sonnadara, R., & Kuperman, V. (2022). Cognitive and social well-being in older adulthood: The CoSoWELL corpus of written life stories. *Behavior Research Methods*, 1–25. https://doi.org/10.3758/s13428-022-01926-0

Lasaleta, J. D., Sedikides, C., & Vohs, K. D. (2014). Nostalgia weakens the desire for money. *Journal of Consumer Research*, *41*(3), 713–729. https://doi.org/10.1086/677227

Lasaleta, J. D., Werle, C. O. C., & Yamim, A. P. (2021). Nostalgia makes people eat healthier. *Appetite*, *162*, 105187. https://doi.org/10.1016/j.appet.2021.105187

Layous, K., Kurtz, J. L., Wildschut, T., & Sedikides, C. (2022). The effect of a multi-week nostalgia intervention on well-being: Mechanisms and moderation. *Emotion*, *22*(8), 1952–1968. https://doi.org/10.1037/emo0000817

Leunissen, J. M., Wildschut, T., Sedikides, C., & Routledge, C. (2021). The hedonic character of nostalgia: An integrative data analysis. *Emotion Review*, *13*(2), 139–156. https://doi.org/10.1177/1754073920950455

MacKenzie, S. B., Lutz, R. J., & Belch, G. E. (1986). The role of attitude toward the ad as a mediator of advertising effectiveness: A test of competing explanations. *Journal of Marketing Research*, *13*(2), 130–143. https://doi.org/10.2307/3151660

Madoglou, A., Gkinopoulos, T., Xanthopoulos, P., & Kalamaras, D. (2017). Representations of autobiographical nostalgic memories: Generational effect, gender, nostalgia proneness and communication of nostalgic experiences. *Journal of Integrated Social Sciences*, *7*, 60–88.

Marchegiani, C., & Phau, I. (2013). Development and validation of the Personal Nostalgia Scale. *Journal of Marketing Communications*, *19*(1), 22–43. https://doi.org/10.1080/13527266.2010.542078

Merchant, A., & Rose, G. M. (2013). Effects of advertising-evoked vicarious nostalgia on brand heritage. *Journal of Business Research*, *66*(12), 2619–2625. https://doi.org/10.1016/j.jbusres.2012.05.021

Muehling, D. D., & Pascal, V. J. (2011). An empirical investigation of the differential effects of personal, historical, and non-nostalgic advertising on consumer responses. *Journal of Advertising*, *40*(2), 107–122. https://doi.org/10.2753/JOA0091-3367400208

Muehling, D. D., & Pascal, V. J. (2012). An involvement explanation for nostalgia advertising effects. *Journal of Promotion Management*, *18*(1), 100–118. https://doi.org/10.1080/10496491.2012.646222

Muehling, D. D., & Sprott, D. E. (2004). The power of reflection: An empirical examination of nostalgia advertising effects. *Journal of Advertising*, *33*(3), 25–36. https://doi.org/10.1080/00913367.2004.10639165

Muehling, D. D., Sprott, D. E., & Sultan, A. J. (2014). Exploring the boundaries of nostalgic advertising effects: A consideration of childhood brand exposure and attachment on consumers' responses to nostalgia-themed advertisements. *Journal of Advertising*, *43*(1), 73–84. https://doi.org/10.1080/00913367.2013.815110

Newman, D. B., Sachs, M. E., Stone, A. A., & Schwarz, N. (2020). Nostalgia and well-being in daily life: An ecological validity perspective. *Journal of Personality and Social Psychology*, *118*(2), 325–347. https://doi.org/10.1037/pspp0000236

Ni, J., Li, J., & McAuley, J. (2019). Justifying recommendations using distantly-labeled reviews and fine-grained aspects. In *Proceedings of the 2019 conference on empirical methods in natural language processing and the 9th International Joint Conference on Natural Language Processing (EMNLP-IJCNLP)* (pp. 188–197). Association for Computational Linguistics.

Opoku, R., Abratt, R., & Pitt, L. (2006). Communicating brand personality: Are the websites doing the talking for the top South African business schools? *Journal of Brand Management*, *14*, 20–39.

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*(1), 39–49. https://doi.org/10.1080/10641734.2002.10505126

Pennebaker, J. W., Booth, R. J., Boyd, R. L., & Francis, M. E. (2015). *Linguistic inquiry and word count: LIWC2015*. Pennebaker Conglomerates. http://liwc.wpengine.com/

Pennebaker, J. W., & King, L. A. (1999). Linguistic styles: Language use as an individual difference. *Journal of Personality and Social Psychology*, *77*(6), 1296–1312. https://doi.org/10.1037/0022-3514.77.6.1296

Porter, M. F. (1980). An algorithm for suffix stripping. *Rossiiskaya Akademiya Nauk Programmirovanie*, *14*(3), 130–137. https://doi.org/10.1108/eb046814

Reid, C. A., Green, J. D., Buchmaier, S., McSween, D., Wildschut, T., & Sedikides, C. (2022). Food-evoked nostalgia. *Cognition and Emotion*, *37*, 34–48. https://doi.org/10.1080/02699931.2022.2142525

Reid, C. A., Green, J. D., Wildschut, T., & Sedikides, C. (2015). Scent-evoked nostalgia. *Memory*, *23*(2), 157–166. https://doi.org/10.1080/09658211.2013.876048

Rocklage, M. D., Rucker, D. D., & Nordgren, L. F. (2018). The Evaluative Lexicon 2.0: The measurement of emotionality, extremity, and valence in language. *Behavior Research Methods*, *50*, 1327–1344. https://doi.org/10.3758/s13428-017-0975-6

Routledge, C., Arndt, J., Wildschut, T., Sedikides, C., Hart, C. M., Juhl, J., Vingerhoets, A. J. J. M., & Schlotz, W. (2011). The past makes the present meaningful: Nostalgia as an existential resource. *Journal of Personality and Social Psychology*, *101*(3), 638–652. https://doi.org/10.1037/a0024292

Sedikides, C., Cheung, W. Y., Wildschut, T., Hepper, E. G., Baldursson, E., & Pedersen, B. (2018). Nostalgia motivates pursuit of important goals by increasing meaning in life. *European Journal of Social Psychology*, *48*(2), 209–216. https://doi.org/10.1002/ejsp.2318

Sedikides, C., & Wildschut, T. (2016). Nostalgia: A bittersweet emotion that confers psychological health benefits. In A. M. Wood & J. Johnson (Eds.), *Wiley handbook of positive clinical psychology* (pp. 25–36). Wiley Blackwell.

Sedikides, C., & Wildschut, T. (2018). Finding meaning in nostalgia. *Review of General Psychology*, *22*(1), 48–61. https://doi.org/10.1037/gpr0000109

Sedikides, C., & Wildschut, T. (2019). The sociality of personal and collective nostalgia. *European Review of Social Psychology*, *30*(1), 123–173. https://doi.org/10.1080/10463283.2019.1630098

Sedikides, C., & Wildschut, T. (2023). Nostalgia as motivation. *Current Opinion in Psychology*, *49*, 101537. https://doi.org/10.1016/j.copsyc.2022.101537

Sedikides, C., Wildschut, T., Cheung, W., Routledge, C., Hepper, E. G., Arndt, J., Vail, K., Zhou, X., Brackstone, K., & Vingerhoets,

A. J. (2016). Nostalgia fosters self-continuity: Uncovering the mechanism (social connectedness) and consequence (eudaimonic well-being). *Emotion*, *16*(4), 524–539. https://doi.org/10.1037/emo0000136

Sedikides, C., Wildschut, T., Routledge, C., & Arndt, J. (2015). Nostalgia counteracts self-discontinuity and restores self-continuity. *European Journal of Social Psychology*, *45*(1), 52–61. https://doi.org/10.1002/ejsp.2073

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

Silge, J., & Robinson, D. (2017). *Text mining with R: A tidy approach*. O'Reilly Media, Inc. https://play.google.com/store/books/details?id=qtcnDwAAQBAJ

Smeekes, A. (2015). National nostalgia: A group-based emotion that benefits the in-group but hampers intergroup relations. *International Journal of Intercultural Relations*, *49*, 54–67. https://doi.org/10.1016/j.ijintrel.2015.07.001

Stephan, E., Sedikides, C., & Wildschut, T. (2012). Mental travel into the past: Differentiating recollections of nostalgic, ordinary, and positive events. *European Journal of Social Psychology*, *42*(3), 290–298. https://doi.org/10.1002/ejsp.1865

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*(10), 1395–1410. https://doi.org/10.1177/0146167215596985

Sujan, M., Bettman, J. R., & Baumgartner, H. (1993). Influencing consumer judgments using autobiographical memories—A self-referencing perspective. *Journal of Marketing Research*, *30*(4), 422–436. https://doi.org/10.2307/3172688

The new Oxford Dictionary of English. (1998). Oxford University Press.

Trew, J. L., & Alden, L. E. (2015). Kindness reduces avoidance goals in socially anxious individuals. *Motivation and Emotion*, *39*(6), 892–907. https://doi.org/10.1007/s11031-015-9499-5

Turner, J. R., & Stanley, J. T. (2021). Holding on to pieces of the past: Daily reports of nostalgia in a life-span sample. *Emotion*, *21*(5), 951–961. https://doi.org/10.1037/emo0000980

Turner, R. N., Wildschut, T., & Sedikides, C. (2018). Fighting ageism through nostalgia. *European Journal of Social Psychology*, *48*(2), 196–208. https://doi.org/10.1002/ejsp.2317

Turner, R. N., Wildschut, T., & Sedikides, C. (2022). Reducing social distance caused by weight stigma: Nostalgia changes behavior toward overweight individuals. *Journal of Applied Social Psychology*, *52*(6), 429–438. https://doi.org/10.1111/jasp.12869

Turner, R. N., Wildschut, T., Sedikides, C., & Gheorghiu, M. (2013). Combating the mental health stigma with nostalgia. *European Journal of Social Psychology*, *43*(5), 413–422. https://doi.org/10.1002/ejsp.1952

Van Tilburg, W. A. P., Bruder, M., Wildschut, T., Sedikides, C., & Göritz, A. S. (2019). An appraisal profile of nostalgia. *Emotion*, *19*(1), 21–36. https://doi.org/10.1037/emo0000417

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

Van Tilburg, W. A. P., Wildschut, T., & Sedikides, C. (2018). Nostalgia's place among self-conscious emotions. *Cognition and Emotion*, *32*(4), 742–759. https://doi.org/10.1080/02699931.2017.1351331

Weber, R., Mangus, J. M., Huskey, R., Hopp, F. R., Amir, O., Swanson, R., Gordon, A., Khooshabeh, P., Hahn, L. S., & Tamborini, R. (2018). Extracting latent moral information from text narratives: Relevance, challenges, and solutions. *Communication Methods and Measures*, *12*(2–3), 119–139. https://doi.org/10.1080/19312458.2018.1447656

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*(5), 844–863. https://doi.org/10.1037/a0037760

Wildschut, T., & Sedikides, C. (2022a). Psychology and nostalgia: Towards a functional approach. In M. H. Jacobsen (Ed.), *Intimations of nostalgia: Multidisciplinary explorations of an enduring emotion* (pp. 110–128). Bristol University Press.

Wildschut, T., & Sedikides, C. (2022b). Water from the Lake of Memory: The regulatory model of nostalgia. *Current Directions in Psychological Science*, *32*, 57–64. https://doi.org/10.1177/09637214221121768

Wildschut, T., & Sedikides, C. (2022c). Benefits of nostalgia in vulnerable populations. *European Review of Social Psychology*, *34*, 44–91. https://doi.org/10.1080/10463283.2022.2036005

Wildschut, T., & Sedikides, C. (2023). Nostalgia and protection of psychological wellbeing during the COVID-19 pandemic. In M. K. Miller (Ed.), *The social science of the COVID-19 pandemic: A call to action for researchers*. Cambridge University Press.

Wildschut, T., Sedikides, C., & Alowidy, D. (2019). *Hanin*: Nostalgia among Syrian refugees. *European Journal of Social Psychology*, *49*(7), 1368–1384. https://doi.org/10.1002/ejsp.2590

Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nostalgia: Content, triggers, functions. *Journal of Personality and Social Psychology*, *91*(5), 975–993. https://doi.org/10.1037/0022-3514.91.5.975

Wildschut, T., Sedikides, C., Routledge, C., Arndt, J., & Cordaro, F. (2010). Nostalgia as a repository of social connectedness: The role of attachment-related avoidance. *Journal of Personality and Social Psychology*, *98*(4), 573–586. https://doi.org/10.1037/a0017597

Zhou, X., Sedikides, C., Mo, T., Li, W., Hong, E., & Wildschut, T. (2022). The restorative power of nostalgia: Thwarting loneliness by raising happiness during the COVID-19 pandemic. *Social Psychological and Personality Science*, *13*(4), 803–815. https://doi.org/10.1177/19485506211041830

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

Zhou, X., van Tilburg, W. A. P., Mei, D., Wildschut, T., & Sedikides, C. (2019). Hungering for the past: Nostalgic food labels increase purchase intentions and actual consumption. *Appetite*, *140*, 151–158. https://doi.org/10.1016/j.appet.2019.05.007

Zhou, X., Wildschut, T., Sedikides, C., Shi, K., & Feng, C. (2012). Nostalgia: The gift that keeps on giving. *Journal of Consumer Research*, *39*(1), 39–50. https://doi.org/10.1086/662199

Zou, G. Y. (2007). Toward using confidence intervals to compare correlations. *Psychological Methods*, *12*(4), 399–413. https://doi.org/10.1037/1082-989X.12.4.399

SUPPORTING INFORMATION

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

How to cite this article: Chen, J., Layous, K., Wildschut, T., & Sedikides, C. (2023). Identifying nostalgia in text: The development and validation of the nostalgia dictionary. *Journal of Consumer Psychology*, *33*, 728–742. https://doi.org/10.1002/jcpy.1359