#### ARTICLE





# The utility of nostalgia for unhealthy populations: A systematic review and narrative analysis

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#### Abstract

Nostalgic reverie (i.e. sentimental longing) has received increased attention as a predictor of health and well-being, but only a handful of reviews have summarized this literature. The available reviews (Dementia: The International Journal of Social Research and Practice, 19, 2020, 330; Intimations of nostalgia: Multidisciplinary explorations of an enduring emotion, Bristol University Press, 2022) left a critical gap in explicating the function of nostalgia among people engaged in unhealthy behaviour. In the current systematic review and narrative analysis, we sought to answer whether and under what conditions emotion serves to help or hinder people engaged in unhealthy behaviours in terms of taking action to change. We identified 14 studies and categorized them into two themes. In Theme I, nostalgising about a time in one's life when one was healthier motivated both readiness to change and action to change unhealthy behaviour. In Theme II, nostalgizing about the perceived benefits of engaging in unhealthy behaviour (e.g. social connectedness related to drinking) was associated with the continuance or acceleration of the unhealthy behaviour. This review highlights not only the presence of a link between nostalgia and unhealthy behaviour but also that the content of one's nostalgising matters for understanding whether the unhealthy behaviour is undermined or bolstered.

# KEYWORDS

action to change, health, healthy behaviour, nostalgia, readiness to change, unhealthy behaviour

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# INTRODUCTION

Healthy behaviour change is complicated, with many people experiencing psychological difficulties and relapse (Haslam, Jetten, et al., 2018; Sliedrecht et al., 2019). Part of the reason why the process of behaviour change is difficult is that it often requires people who engage in unhealthy behaviour (e.g. smoking or drinking) to restructure their identity—for example, from 'a person who smokes' to 'a former smoker' (Dingle et al., 2015). This transition can create self-discontinuity or disconnection with the past self (Sedikides et al., 2023), because healthy behaviour change is often associated with the loss of, among other things, a defining self-feature and social ties to other people engaged in the unhealthy behaviour. At first blush, the loss of social ties that perpetuated unhealthy behaviour may be deemed beneficial. However, such loss may compromise well-being and undermine behaviour change, if it elicits nostalgic reverie (i.e. sentimental longing; Sedikides, Wildschut, Arndt, & Routledge, 2008) for those lost social ties, which may pull them back to the unhealthy behaviour (Lee et al., 2006). Alternatively, people may feel that their unhealthy behaviour has created discontinuity with their healthier self and undermined important social ties that existed prior to the onset of their unhealthy behaviour (Kim & Wohl, 2015). Under these conditions, nostalgia may instead motivate healthy behaviour change for people to push themselves away from unhealthy behaviour. In the current systematic review, we leveraged a growing body of work on the social psychology of health (Haslam et al., 2009; Haslam, McMahon, et al., 2018) to better understand when nostalgizing facilitates behaviour change and when it perpetuates unhealthy behaviour.

Social psychological research among samples of healthy individuals has shown that nostalgizing increases social connectedness (i.e. feeling protected, supported, loved, and trusting of others), self-esteem, and positive affect (Leunissen et al., 2021; Vess et al., 2012; Wildschut et al., 2006). Additionally, nostalgia augments life meaningfulness (Routledge et al., 2011), optimism (Cheung et al., 2013), and inspiration (Stephan et al., 2015). It does so mainly by re-establishing a symbolic connection with close persons and personally relevant, momentous events from one's past. Consequently, nostalgia has been positioned as an active coping resource (Wildschut & Sedikides, 2023a), because it motivates action to address life stressors (Sedikides & Wildschut, 2019).

However, few literature reviews speak directly to the relevance of nostalgia for health and wellbeing. These reviews have advanced understanding in this domain (Ismail et al., 2020; Wildschut & Sedikides, 2023b), but critical knowledge gaps remain. For instance, although Ismail et al. (2020) suggested that nostalgia buffers against the ill effects of dementia, only five of the 25 articles they deemed eligible for their systematic review included the population of interest (i.e. people living with dementia). Additionally, although Wildschut and Sedikides (2023b) concluded that nostalgia-based interventions may help facilitate wellness among the unwell, they noted contradictory findings. In particular, distressed Syrian refugees residing in Saudi Arabia had reduced optimism after recalling a nostalgic (compared to ordinary) event from their past (Wildschut et al., 2019). Critically, neither of these reviews included studies that assessed nostalgizing among people who were engaged in unhealthy behaviour, defined as voluntary and alterable actions that result in decrements to one's health and well-being. In the current systematic review, we searched broadly for research on the influence of nostalgia in multiple domains of unhealthy behaviour, namely, unhealthy eating, alcohol use disorders and disordered gambling. We consolidated and synthesized this literature to address a critical question: Do nostalgic memories serve to help a person engaged in unhealthy behaviours take action to change their behaviour or do these memories serve to perpetuate unhealthy behaviour?

We adopted both the social identity approach to health (Haslam et al., 2009) and Wohl et al.'s (2020) framework suggesting that there is predictive utility in the content of a person's nostalgizing. Specifically, we considered what people engaged in unhealthy behaviour long for. This consideration allowed us to make theoretically grounded propositions about the link between nostalgia and unhealthy behaviour. We hypothesized that nostalgizing about life (including one's social ties) before the unhealthy behaviour entered one's behavioural repertoire will motivate action dedicated to reclaiming the life they once led by quitting or cutting down on one's unhealthy behaviour. Such action will be due to nostalgia making

salient how life was better before one's behaviour became unhealthy, accompanied by a desire to bring that self-functioning back to the present. Conversely, nostalgizing about situations or social ties (e.g. hanging out with particular groups of friends) that elicited the unhealthy behaviour or the benefits reaped from the unhealthy behaviour (e.g. excitement) will result in the continuation or exacerbation of that unhealthy behaviour. Such action will be due to nostalgia serving to motivate a desire to reexperience those perceived benefits, that is to relive those experiences.

This systematic review contributes to the literature in three ways. First, behaviour change is hard. Although many people understand that certain behaviours within their repertoire undermine their health and well-being, they fail to take the necessary steps to refrain from their unhealthy behaviours. Indeed, people often find it difficult to change despite knowing that, for example, their alcohol consumption has become problematic, they are exercising to the point of injury, or they are gambling more than they can afford to lose (Webb & Sheeran, 2006). In fact, the majority of those who engage in unhealthy behaviour fail to take the necessary steps to cut down or quit that behaviour despite the array of negative psychological, physical, interpersonal, legal and financial harms that these unhealthy behaviours cause (DiClemente, 2018). Moreover, recovery from unhealthy behaviours is characterized by a relapse; for example, most people in recovery will relapse at least once (DiClemente & Crisafulli, 2017; O'Brien & McLellan, 1986; Prochaska et al., 1992). Of course, some individuals are able to right the proverbial behavioural ship. Understanding whether nostalgia facilitates behaviour change—or at least the conditions under which it facilitates behaviour change—can stimulate basic and applied research that advances wellness among those in need.

Second, both theory and research from social and clinical psychology suggest that looking back to positive times and social ties from one's past can motivate healthy behaviour change (Berg & Miller, 1992; Haslam et al., 2009; Miller & Rollnick, 2002). For instance, people living with addiction report that change is a function of perceiving the past (non-addicted self) in a positive light (Nuske & Hing, 2013). Increasingly, nostalgia has been positioned as the emotional mechanism that drives the benefits of looking back; that is nostalgia is the agent of behaviour change (Kim & Wohl, 2015; Routledge et al., 2013; Salmon et al., 2018; Wohl et al., 2018). Indeed, colloquially understood as being a positive emotional response to thoughts of pleasant days gone by, accumulating evidence suggests that nostalgia is an active, coping resource (Sedikides, Wildschut, Routledge, & Arndt, 2015; Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015; Wildschut & Sedikides, 2023a) in that it instigates approach motivation (Sedikides & Wildschut, 2020; Stephan et al., 2014). That is, nostalgia functions to draw the person psychologically closer to a positive time in their past that has been lost and heightens the desire for a return to that past. In this way, nostalgizing may motivate people to reclaim a past when the unhealthy behaviour was not part of their repertoire.

But does nostalgia always facilitate healthy behaviour change? Traditional conceptualization of nostalgia positioned this emotion as a hindrance to health and well-being (Boym, 2007). Specifically, nostalgizing was perceived to be a regressive manifestation of loss, grief and depression (Castelnuovo-Tedesco, 1980). Such a view persists among scholars from an array of disciplines, including history (Velikonja, 2009), comparative literature (Boym, 2001), media studies (Phillipov, 2016), psychoanalysis (Hook, 2012; Peters, 1985), psychiatry (Fuentenebro de Diego & Valiente, 2014) and psychology (Cappeliez et al., 2008; Henkel et al., 2017). Thus, the third and final reason for conducting the current systematic review is to better understand possible contradictions in the literature on nostalgia and health among individuals engaged in unhealthy behaviour. It is within the contradictions that scientific progress is made possible by initiating further theoretical and empirical efforts to identify limits and boundaries as well as moderators of a particular effect (Anderson et al., 1997).

# Overview

Much of what is known about the consequences of nostalgia in the field of social psychology is based on empirical work that has focused on healthy samples (for reviews, see Sedikides & Wildschut, 2018,

2019; Sedikides, Wildschut, Routledge, & Arndt, 2015; Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015; Wildschut & Sedikides, 2022), with only two reviews addressing the possible link between nostalgia and well-being (Ismail et al., 2020; Wildschut & Sedikides, 2023b). However, no review has been undertaken to assess the influence that nostalgising may have on people engaged in unhealthy behaviour. In the current article, we report the results of a systematic review and narrative analysis of the extant literature on populations engaged in behaviours that are detrimental to their health and well-being (1900-2022). We operationally defined unhealthy behaviours as voluntary, alterable actions that either directly or indirectly result in mental or physical harm to the participant (e.g. poor diet and exercise habits, addictive behaviours, high-risk behaviours). Consequently, for the purposes of the current systematic review and narrative analysis, unhealthy behaviours do not include chronic cognitive disorders (i.e. dementia) or mood disorders (i.e. depression, anxiety). In defining it thusly, we expand on existing reviews on the functions of nostalgia—those that focus on the positive psychological outcomes of nostalgizing in healthy individuals (Ismail et al., 2020; Routledge et al., 2013). Specifically, instead of relying on research on healthy populations to speculate on the usefulness of nostalgia for unhealthy populations, we reviewed empirical work in which the population of interest is individuals who were engaging in unhealthy behaviour at the time of data collection. We preregistered this systematic review: https://osf.io/92cs3?view\_only=44ab2 7ed12574f02a102c83adb9a343f.

# **METHOD**

We relied on a comprehensive database search (i.e. PsycInfo, ProQuest Dissertations and Thesis, PubMed, Scopus) to identify relevant records, published between 1 January 1900 and 25 May 2022. We condensed records captured by the search and analysed them using Covidence (a web-based collaboration software platform that streamlines the production of systematic and other literature reviews; Veritas Health Innovation, 2022) and PRISMA (Liberati et al., 2009; Page et al., 2021) guidelines. Searches consisted of article titles, abstracts and keywords to identify studies that related to nostalgia and unhealthy behaviour: TI(nostalgia) AND AB(nostalgia) AND noft(addiction) OR noft(health) OR noft(unhealthy) OR noft(harm) OR noft(risk) OR noft(problem\*) OR noft(disorder\*) OR noft(change) OR noft(behavio[u]r) OR noft(tool) or noft(resource).

#### Inclusion and exclusion criteria

We included records if they were (a) an original (primary) research record (e.g. journal article, dissertation/theses), (b) available in English or could be translated into English, (c) assessed nostalgia at the individual level (i.e. personal nostalgia) and (d) specifically assessed a problematic behaviour or experience (e.g. addiction, self-harming behaviours, risk taking, general unhealthy behaviours) that was present in the sample at data collection time. We excluded records that did not meet these criteria (Table 1). We deemed it eligible for both quantitative and qualitative research to ensure a greater breadth of the literature covered.

To test the efficacy of the current search strategy and confirm that the search string captured all relevant titles, a research team member reviewed the bibliographies of pertinent documents and cross-referenced recurring sources. This strategy confirmed the validity of our search strategy, as it identified no new articles. Further, two research team members examined the total search yield and made collaborative decisions about the relevancy of each record. They resolved coding discrepancies via discussion. We retained for further inspection studies that met all inclusion criteria and none of the exclusion criteria.

TABLE 1 Inclusion and exclusion criteria.

Include	Exclude
Paper is original (primary) research  • Journal article (peer reviewed)  • Dissertations/Theses (can be unpublished)	Paper is not original research  Books and chapters  Review paper  Secondary analyses
Language is English or translation to English is accessible	Language is other than English or is not able to be translated
Personal nostalgia (at the individual level—nostalgia for one's own past)	Collective nostalgia (at the group level—nostalgia for the group's past)
Assesses a population experiencing or engaging in a behaviour that is:  Unhealthy A risk A harm Problematic or disordered Experimental manipulations and measurements Measures or manipulates nostalgia Using mediation or pathway models Correlational designs Cross-sectional Longitudinal studies Using mediation or pathway models Qualitative studies	<ul> <li>Study does NOT assess a population engaging in a behaviour that is:</li> <li>Unhealthy</li> <li>A risk</li> <li>A harm</li> <li>Problematic or disordered</li> </ul>

<sup>&</sup>lt;sup>a</sup>Qualitative studies were not initially in our inclusion criteria. Ultimately, we saw value in their inclusion, especially due to the paucity of research linking nostalgia and unhealthy behaviour.

# RESULTS

# Study selection

The search strategy yielded 1091 records related to nostalgia and engagement in unhealthy behaviours. After we removed duplicates using the online program Covidence, we were left with 747 unique records. We reviewed in full those records that we deemed potentially relevant during the title and abstract screening (k=19). Following a full-text reading, 11 research articles (containing 14 unique studies) passed the screening process. For details of the record screening process, reviewed in a PRISMA chart (see Figure 1).

# Study characteristics

# Country

We drew all samples from the United States except for Espinoza-Ortega (2021) who conducted their research with participants residing in Mexico, and Parco et al. (2011) who conducted their research with participants residing in Italy.

# Target population

Participants engaged in one of the following unhealthy behaviours: Disordered gambling (k = 5; Kim & Wohl, 2015, Studies 1 and 2; Salmon et al., 2018; Salmon & Wohl, 2020; Wohl et al., 2018,

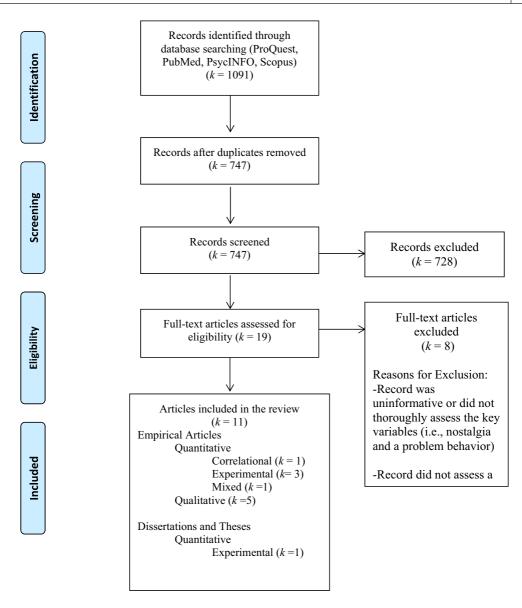


FIGURE 1 Prisma diagram.

Study 1), excessive drinking (k = 4; Kim & Wohl, 2015, Study 3; Lasaleta, 2013; Lee et al., 2006; Wohl et al., 2018, Study 2), unhealthy eating (k = 3; Espinoza-Ortega, 2021; Parco et al., 2011; Viladrich & Tagliaferro, 2016), smoking (k = 1; Bottorff et al., 2000) and sedentary behaviour (k = 1; Sharp et al., 2018).

# Sample size

We captured 1594 participants across the eligible research studies. The sample sizes used in the 14 identified studies varied considerably from N=23 (Sharp et al., 2018) to N=712 (Parco et al., 2011), with an average of 114 participants per study.

# Participant demographics

Across studies, participants ranged in age from 3 to 77 years. Parco et al. (2011) tested children aged 3–16 years, and Espinoza-Ortega (2021) tested participants who were over 12 years old. The remaining studies recruited adult populations (i.e. over 18 years). Two of the studies contained only female participants (Bottorff et al., 2000; Viladrich & Tagliaferro, 2016) and one contained only male participants (Sharp et al., 2018). Three studies (Espinoza-Ortega, 2021; Lee et al., 2006; Viladrich & Tagliaferro, 2016) were conducted with participants who identified with a specific ethnic group (Latina/Latino). The remaining studies recruited participants of multiple genders and ethnocultural backgrounds.

# Methodology

Of the 14 studies included in our review, seven used quantitative methods (Kim & Wohl, 2015, Studies 1–3; Lasaleta, 2013; Salmon et al., 2018; Wohl et al., 2018, Studies 1 and 2), five used qualitative methods (Bottorff et al., 2000; Espinoza-Ortega, 2021; Lee et al., 2006; Parco et al., 2011; Sharp et al., 2018) and two used a mixed method approach (i.e. quantitative and qualitative; Salmon & Wohl, 2020; Viladrich & Tagliaferro, 2016). Six of the studies (Kim & Wohl, 2015, Studies 1–3; Salmon et al., 2018; Salmon & Wohl, 2020; Wohl et al., 2018, Studies 1 and 2) used online data collection methods, whereas the remaining studies collected data using semi-structured interviews over the phone, in-person surveys or focus groups.

# Identified themes

All authors read and re-read the 14 studies included in the systematic review. To analyse the results of the qualitative studies, the authors separately read through each study in-depth, identifying relevant themes and patterns related to the research question. Next, we synthesized the findings across the identified qualitative studies to develop a narrative summary that described the possible link between nostalgia and unhealthy behaviour. We did so by drawing on direct quotes and examples from the original studies (Table 2). Finally, we critically evaluated the quality and relevance of the studies included in the analysis by scrutinizing their credibility and trustworthiness (e.g. examination of the rigour of the data collection and analysis methods). We examined the transferability or generalisability of the findings by considering the characteristics of the study population, the context in which the study was conducted, and the potential for the findings to be applicable to other settings or populations. Lastly, we evaluated the coherence and richness of the data (e.g. the extent to which the studies provide a detailed, nuanced understanding of the phenomenon of interest). We then met to discuss the 14 studies and achieved 100% agreement about the presence of two themes.

The first theme comprised nine studies from six records that depicted nostalgia as a facilitator of healthy behaviour change (Kim & Wohl, 2015, Studies 1–3; Lasaleta, 2013; Salmon et al., 2018; Salmon & Wohl, 2020; Sharp et al., 2018; Wohl et al., 2018, Studies 1 and 2). The second theme comprised five studies from five records that identified nostalgizing as a contributor to the initiation or continuation of engagement in unhealthy behaviours (Bottorff et al., 2000; Espinoza-Ortega, 2021; Lee et al., 2006; Parco et al., 2011; Viladrich & Tagliaferro, 2016). Next, we describe each identified study and how the results contribute to a given theme (see Table 3 for a summary).

Theme I: Nostalgia facilitates healthy behaviour change when focused on reclaiming life lived before the unhealthy behaviour began

Nine studies reported a positive association between nostalgia and readiness to change one's unhealthy behaviour or engagement in behaviour change. In all these studies, the content of the nostalgic reverie

TABLE 2 Themes	and supporting extracts from the identified studies.	
Authors	Excerpts from the researchers	Extracted participant quotes from the study
Theme I: Nostalgia facilita	tes healthy behaviour change when focused on reclaiming life lived before the unh	ealthy behaviour began
Kim and Wohl (2015)	'Specifically, the net effect of self-discontinuity-induced nostalgia among problem gamblers and drinkers was a greater readiness to lead a life without the addictive behavior'. p. 235	N/A
Salmon and Wohl (2020)	' findings do align with the extant literature on the behavior change utility of nostalgia as well as the literature on the desire for a better possible future as motivation for behavior change. As such, we have some confidence that our findings have basic and applied significance for understanding how to motivate behavior change among people living with addiction. Specifically, nostalgia appears to be an important factor in readying oneself for change when there is a readily accessible positive past to draw upon'. p. 11	N/A
Sharp et al. (2018)	'Men in this study specifically identified the sensory stimuli within the arena, including both sound and smell, as an important nostalgic and innate draw to the program. This familiarity as well as the memories invoked by being at and working within a professional ice hockey facility clearly lobbied many participants to begin to address changes in their health and lifestyles'. p. 2164  'these findings highlight the importance of program design, centred on sport and sport fandom. This design clearly provides an entry-point and a hook to begin the conversation about health-related behaviours. Expanding on this, and unique to the present research, was the integration of the sport-related theme (i.e. related to ice hockey) throughout the content of the program and its materials, including the use of language, images, and metaphors to relay information in a relatable manner.' p. 2163	'I grew up in the hockey rink so just hearing the practice in the background and the sounds and smells of the hockey rink it's just a comfortable place, so much better than the gym atmosphere'. p. 2161
Wohl et al. (2018)	' to our knowledge, this is the first study to demonstrate that self-dis-continuity (by way of nostalgia) influences self-reported behavior change among people living with addiction'. p. 88 'Thus, discontinuity-induced nostalgic reverie increases the odds of self-reported behavior change because it readies those with elevated addiction severity for change'. p. 91	N/A
Theme II: Nostalgia under behaviour	mines healthy behaviour change when focused on reclaiming the (perceived) benef	its of engaging in the unhealthy
Bottorff et al. (2000)	'What is distinctive about the narrative of nostalgia as a story of relapse is the fondness with which the women recalled their past experiences of smoking. The nostalgic feelings about smoking were accentuated by the women's growing sense of responsibility associated with motherhood'. p. 131  "we found that identity issues were an important dimension of the postpartum experience that was linked to smoking relapse. For some women in this study, assuming the	'I miss my life when I was a smoker. Smoking is associated with happy times, friends, and the freedom to do what I want. Smoking helps me recapture my 'old self 'as I was before I had the baby'.

responsibility of caring for a newborn presented some unexpected-ed conflicts. These women longed for their "old selves," free from their demanding responsibilities and feelings of being "tied" to a newborn. Smoking was often associated with their "old" self-image and, consequently, provided an important link with the past'. pp. 133-134

TABLE 2 (Continued)

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Authors	Excerpts from the researchers	Extracted participant quotes from the study
Espinoza- Ortega (2021)	'The increase in comfort foods based on sugar and high energy products in the younger generations as a response to emotional issues may increase future health problems. Different perceptions of nostalgia by generation influence consumption patterns in adult life, which has implications that go beyond the individual and become a social problem that must be considered in public policies'. p. 8	'When I eat hamburgers, I remember when my father took me to eat them, because it was expensive and did not do it frequently. I feel joy and thankfulness (Man 44 years old)'. p. 6 'Kranky sweets (cornflakes covered in chocolate), because they remind me that my Mom gave them if I behaved well, they make me happy (Woman 19 years old)'. p. 6
Parco et al. (2011)	"'drawn double nostalgia" for foods that they can no longer enjoy if they are affected by celiac disease. In some cases, this leads them to recall tastes, flavors, and smells from their native country that are difficult to replace with glutenfree food products available in specialized stores'. p. 122 'Romanian mothers reported that their children (all males affected by celiac disease) often expressed their nostalgia for favourite foods through drawing and painting, commonly 'pizza, Christmas panettone, and cozonac'. Clearly, for immigrant children with celiac disease, it is difficult to replace the foods that they are no longer able to eat with alternative foods from their native country that are not widely available in Italy'. p. 122	N/A
Viladrich and Tagliaferro (2016)	'Stress-release coping responses included participants' regular nibbling of "heavy" nostalgic foods and American chips and sweets. Nostalgic snacks (such as deep fried savory pastelitos) provided comfort not only because of their taste, but also because of the emotional memories they elicited'. p. 107	'Like-wise, most participants expressed an emotional attachment to the highly-caloric family foods they grew up with, as noted by Marisa (FG3): "These are all things that are part of our culture that we grew up with, and it's sort of like it's not right if we do not have it". p. 104

corresponded to a life lived before the unhealthy behaviour began. That is, the nostalgic reflection was anchored to life functioning in the absence of unhealthy behaviour (e.g. 'Before gambling, I was always happy. I was healthier and had my family by my side'). Seven of them directly examined nostalgia in the context of addiction. Specifically, research conducted by Kim and Wohl (2015), Salmon et al. (2018) and Wohl et al. (2018) measured or manipulated nostalgia in relation to a life lived prior to addictive behaviour. For instance, Kim and Wohl (2015) reported a positive association between nostalgia for life prior to disordered gambling (Studies 1 and 3), or prior to disordered drinking (Study 2), and readiness to change. In a longitudinal assessment of people living with a gambling disorder (Study 1) or an alcohol use disorder (Study 2), Wohl et al. (2018) demonstrated that such nostalgizing increased the odds that a quit attempt was made in the subsequent 30 days.

The study conducted by Lasaleta (2013) can also be framed as an assessment of nostalgia and addiction, given that most participants indicated problematic drinking as their unhealthy behaviour in need of change. Specifically, participants were presented with a set of 12 unhealthy behaviours (e.g. biking

TABLE 3 Record and study characteristics.

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Authors	Objective	Sample size	Sample	Design	Methods	Results
Theme I: Nostalgia facilita	Theme I: Nostalgia facilitates healthy behaviour change					
Kim and Wohl (2015)	Kim and Wohl (2015) To understand associations hypothesized associations between self-discontinuity, nostalgia and readiness to change across to addictive behaviours: gambling (Studies 1 and 2) and drinking (Study 3)	SI: N = 109 S2: N = 80 S3: N = 68	Problem gamblers (Studies 1 and 2) and problem drinkers (Study 3)	Quantitative	Participants completed an online survey where self-discontinuity was measured (Study 1) and manipulated (Studies 2 and 3)	Discontinuity evoked nostalgia for the self before addiction predicted behaviour change. Specifically, there was an indirect effect of self-discontinuity on readiness to change via nostalgia, suggesting the motivational role of nostalgia for those living with gambling and drinking problems
Salmon and Wohl (2020)	To compare the effects of a future versus past focus to instigate behaviour change among people who gamble problematically	N = 59	Problem gamblers	Quantitative	Participants were distributed into either a past-focus or future-focus condition.	Two past-focused clusters were identified. Participants in the first cluster indicated that life was more ideal before addiction took hold. Participants in the second cluster, however, expressed that life was no better before addiction took over. A past focus that elicited nostalgia for life

(Continues)

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reclaim

before addiction took hold had the greatest behaviour change

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Authors	Objective	Sample size	Sample	Design	Methods	Results
Sharp et al. (2018)	To examine motivators of participation in a hockey-themed men's health promotion program, HAT TRICK, which consisted of one 90-min session each week for 12 weeks focused on physical activity, healthy eating and social connectedness	N = 23	Men aged 35 + years who met the criteria for being overweight and inactive	Qualitative	Phone interviews were conducted with participants of HAT TRICK. Researchers used Nvivo software to manage the data and identify response themes	Three themes reflecting men's responses to the gender-sensitized components of the program were identified: (a) harnessing nostalgia for past masculinities, (b) offsetting resistance to change with sensible health advice and (c) gendered social spaces for health activities. Nostalgia was a key determinant of a return to physical activity. Narratives of participant experiences discussed the salience of nostalgic memories of childhood hockey aspirations
Wohl et al. (2018)	To examine the role of discontinuity-induced nostalgia for the pre-addicted self on behaviour change (quit attempts), moderated by addiction severity across two different addictions	S1: $N = 115$ S2: $N = 175$	Problem gamblers (Study 1) and problem drinkers (Study 2)	Quantitative	Participants in Study 1 completed an online survey where they were assigned to either the nostalgia (experimental) condition or the control condition. Participants completed a follow-up survey 30 days later to assess change. The methods of Study 1 were replicated to conduct Study 2	Across both studies, discontinuity- induced nostalgia predicted self-reported quit attempts. This association was present only when addiction severity was high. Moderated-serial mediation showed that when addictive behaviour severity was high (but not when it was low), self-discontinuity increased the odds of a self-reported change attempt via nostalgia and ensuing readiness to change
Theme II: Nostalgia under Bottorff et al. (2000)	Theme II: Nostalgia undermines healthy behaviour change 3 ottorff et al. (2000) To examine narratives of relapse among new mothers who had recently quit and then resumed smoking	N = 27	Post-partum women Qualitative	Qualitative	Participants shared their experiences of [smoking] relapse during hour long, in-depth, open-ended interviews. Transcripts were coded to identify themes across narratives	Nostalgia for the former self (premotherhood) was identified as one of five themes in the narratives of relapse. Such nostalgising was associated with the resumption of smoking

TABLE 3 (Continued)

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Authors	Objective	Sample size	Sample	Design	Methods	Results
Espinoza- Ortega (2021)	To understand nostalgia and generation-based eating motivations in Mexico, where obesity and diabetes are prevalent	N = 206	A multi-generation sample of participants born and living in Mexico	Qualitative	Participants completed a free word association task, where the word nostalgia' was paired with foods and experiences. Data were analysed by generation	Across multiple generations, participants reported consuming nostalgic 'comfort foods'. Notably, the younger generation reported eating more sugary and high-caloric food products
Parco et al. (2011)	To understand the unhealthy eating patterns and preferences among immigrant children in Northeastern Italy	N = 712	Immigrant children who had been diagnosed with celiac disease	Qualitative	Family members of young celiac patients completed a questionnaire asking about their country of origin, food preferences and possible nostalgia for their homeland. Children shared drawings that captured this 'gustatory nostalgia'	Nostalgia for the richer foods of their homeland created unhealthy eating patterns as the foods that they were longing after are not as accessible in Italy
Viladrich and Tagliaferro (2016)	To understand predictors of poor eating habits, obesity among Latina's living in the United States	36 Z	Members of the Latina community	Mixed Methods	Participants engaged in focus groups addressing the following domains:  (1) food choices, (2) purchase and preparation, (3) eating occasions and locations, (4) health food perceptions, (5) differences and changes in time and location and (6) barriers and obstacles to healthy eating, and completed quantitative measures of body image and BMI	Participants described an emotional attachment to the richer family foods (nostalgic foods) that reminded them of their homelands. Nostalgic foods connected participants with emotional memories and community. Participants reported consuming high-caloric, carbohydrate heavy foods in both their home country and in the USA, however, they also reported eating less 'fresh staples' and replacing the produce of their homeland with 'unhealthy' options available in the USA

without a helmet, eating greasy food, drinking too much alcohol) and instructed to indicate the most health-threatening behaviour in which they engaged at least twice a month. Participants who subsequently recalled by experimental manipulation a nostalgic (relative to an ordinary life) event reported greater intentions to curb their indicated unhealthy behaviour. These findings are consistent with the idea that nostalgizing about one's past increases receptiveness to behave in a healthier manner.

The association between nostalgia and healthy behaviour change was not restricted to addictive behaviour. Nostalgizing about a healthier, more physically active junction in one's life motivated engagement in physical activity to improve one's health and well-being. In particular, Sharp et al. (2018) evaluated participation in the HAT TRICK health promotion program—a program designed to engage overweight and inactive men (age 35+) with their health in collaboration with a semi-professional ice hockey team. A core component of this 12-week face-to-face intervention was directed towards harnessing nostalgia for past masculinities related to ice hockey (e.g. youthful aspirations of becoming an ice hockey professional). Semi-structured interviews suggested that the nostalgia component of the intervention brought positive memories (e.g. the sights and smell of the hockey rink and the camaraderie) to the fore and, crucially, a desire to relive past, hockey-related experiences. The net effect was healthy behaviour change, which was operationalized as participation in the HAT TRICK program.

# Theme II: Nostalgia undermines healthy behaviour change when focused on reclaiming the (perceived) benefits of engaging in unhealthy behaviour

In contrast to the nostalgia-inducing behaviour change results observed in the studies noted in Theme I, the remaining research identified by way of our systematic review tells a different story about the link between nostalgia and unhealthy behaviour. In all (five) studies, participants under Theme II nostalgized about the (perceived) positive situations that gave rise to the unhealthy behaviour or the direct benefits they (believed) they reaped from engagement in the unhealthy behaviour (e.g. 'When I think about smoking is brings back happy times with my friends and a sense of freedom. I miss my life when I was a smoker'). Consequently, nostalgizing was associated with a return to the unhealthy behaviour.

Akin to Theme I, two studies recruited participants based on their engagement in addictive behaviour. Bottorff et al. (2000) recruited new mothers who had returned to smoking cigarettes after the birth of their child. A critical factor that predicted smoking relapse was nostalgizing about their prematernal life. Participants noted that they were nostalgic for smoking because it represented a bridge back to their pre-maternal life—a life that lacked the responsibilities and stress of motherhood. Lee et al. (2006) showed that nostalgia can also play a role in excessive drinking. They recruited Latino immigrants in the United States who reported heavy drinking. Participants mentioned that, in Latin America, alcohol consumption was part of everyday living (e.g. being with friends and family). Nostalgia about those everyday events was reflected in participants' reasons for their consumption of alcohol and therefore was associated with a lack of motivation to cease alcohol use.

The research relevant to Theme II was not restricted to addictive behaviour. Three studies (Espinoza-Ortega, 2021; Parco et al., 2011; Viladrich & Tagliaferro, 2016) focused on the association between nostalgia and unhealthy eating. The content of the nostalgia reported was again anchored in the positive memories associated with the unhealthy behaviour—unhealthy foods. Viladrich and Tagliaferro (2016) found that among Latina immigrants in the United States, nostalgia for high-calorie traditional foods contributed to the preservation of unhealthy culinary habits that they consumed in their homeland. Moreover, nostalgia played a key role in choosing unhealthy food over healthier food options. Similarly, Espinoza-Ortega (2021) and Parco et al. (2011) illustrated a link between unhealthy, comfort food consumption and nostalgia. Espinoza-Ortega showed that young Mexican participants nostalgized about their (now absent) parents and the comfort foods their parents would purchase for them as rewards or gifts, resulting in the consumption of foods associated with this nostalgizing. Likewise, Parco et al. illustrated that, among immigrant children, nostalgia for comfort foods and tastes that are 'cozonac' (from the native country) and 'panettone' (Italian cake flavour) represents a health problem for these

children. Put differently, nostalgia for unhealthy food consumption is related to behaviours aimed at recreating or reincarnating those experiences. This is accomplished by way of unhealthy food consumption in the present.

# Quality assessment

To determine the empirical strength of these 14 studies, we used the Let Evidence Guide Every New Decision (LEGEND) evidence evaluation tool (Clark et al., 2009) in assessing each record (Table 4). LEGEND was designed to inform evidence-based decision-making in clinical research to achieve optimal patient care. Although evidence-based decision-making is primarily relevant for assessing the effectiveness of a product in treatment environments, LEGEND was appropriate for the current project because included studies did not necessarily take place in a clinical setting. The base algorithm and evidence assessment tools determine (a) the aim of the study and its relevance to the context of the review, (b) the design of the study and (c) the quality of the study, while (d) providing grading materials that judge the empirical strength of the work. At the end of the evaluation, records are categorized as good quality, lesser quality or, alternatively, invalid, unreliable or inapplicable.

A lack of robust methodology and relevant data was cause for concern for three studies (Espinoza-Ortega, 2021; Lasaleta, 2013; Parco et al., 2011), and thus we recommend interpreting their results with caution. Although Parco et al. (2011) provided vivid descriptions of 'gustatory nostalgia' for inaccessible cultural food staples, they did not describe thoroughly their methodology or data analytic technique. Lasaleta (2013, Chapter 3, Study 2) reported evidence of the role of nostalgia on health-compromising behaviours (i.e. heavy drinking, poor diets, not wearing a helmet). However, given that participants identified a health-compromising behaviour post-eligibility assessment, there was no confirmation of a pre-existing problem behaviour. Consequently, we do not know whether participants' responses reflected their direct experience with engagement in an unhealthy behaviour, thus limiting the relevance of the study for the purpose of the current review. Lastly, Espinoza-Ortega (2021) categorized narratives that stemmed from interviews based on nostalgiarelated words. However, she categorized these words only in terms of emotions (negative, positive, ambivalent, bitter and pleasurable) as well as in relation to family, the countryside, culture and economic aspects. She did not categorize them in relation to the consequences of nostalgia for unhealthy behaviour (i.e. the aim of the current systematic review). We included this study because the association between nostalgizing and the consumption of comfort food (particularly in younger generations) was explicitly noted by both Espinoza-Ortega and the participants. Indeed, a takehome message was that the link between nostalgia and unhealthy food consumption should be considered in public policies.

# **DISCUSSION**

The current 14-study systematic review is the first to undertake an evidence-based synthesis and narrative analysis of the relationship between nostalgia and unhealthy behaviour. Two recent reviews (Ismail et al., 2020; Wildschut & Sedikides, 2023b) positioned nostalgia as a coping resource that helps facilitate health and healthy behaviour change, but neither one focused on research that assessed nostalgizing among people engaged in unhealthy behaviour. We attempted to improve our understanding of whether nostalgia facilitates behaviour change among those in need of change. Although there is strong evidence that nostalgia can motivate healthy behaviour change, the current results indicate that nostalgizing is not a panacea. As hypothesized, the effect of nostalgia on unhealthy behaviour is dependent on what the person engaged in the unhealthy behaviour longs for. The content of nostalgic reverie matters.

TABLE 4 Quality evaluation summary of all studies included in the review.

Study	Study type	Study grade in the context of the current review	Evaluation notes
Bottorff et al. (2000)	Qualitative/Narrative	Good quality	This study used a narrative approach to gain insight into relapse experiences from new mothers who had resumed smoking post-partum. One of the five storylines drawn from participant interviews was nostalgia for one's former self (relapsing to recapture feelings of freedom and happier times). This qualitative evidence provides an example of nostalgia re-igniting the problem behaviour
Espinoza-Ortega (2021)	Qualitative/Narrative	Lesser quality	Despite the rich information presented, the research article does not discuss enough themes relevant to the goal of the current review. It can be stipulated that a problem behaviour could be present in one of the cohorts (where emotion is linked to sugary food consumption), however, the methodology of the study did not allow us to empirically explore this effect
Kim and Wohl (2015)	Cross-sectional (Studies 1, 2, 3)	Good quality	This triad of studies demonstrates the utility of nostalgia for the part self (non-addicted) as a motivator (resource) of behaviour change for people living with (a) problem gambling or (b) problem drinking
Lasaleta (2013)	Cross-sectional (Study 2)	Lesser quality	Of the three studies included in the final chapter of this dissertation, Study 2 provides evidence of the role of nostalgia on health-compromising behaviours. Participants in the nostalgia reflection condition were significantly more motivated to curb their health-threatening behaviour compared to control participants. The limitation of this finding in the context of the current review is that participants were not followed up with to see if behaviour change took place, and because participants self-identified their health-endangering behaviour post-eligibility assessment, we do not know if they were experiencing a problem behaviour of interest and the degree to which the behaviours were deemed problematic by the participant may not accurately reflect the experience
Lee et al. (2006)	Qualitative/Narrative	Good quality	This article is informative to the current review. Through qualitative methods, the researchers establish a link between nostalgising (for one's home country) and problematic heavy drinking patterns. Nostalgia, however, was not a key variable introduced, assessed or discussed in the manuscript
Parco et al. (2011)	Qualitative/Narrative	Lesser quality	This article provides examples of gustatory nostalgia for inaccessible cultural staples, especially those that are 'high energy/caloric' foods (i.e. pizza, panettone). However, the methodology employed and data analytic technique was not thoroughly described
Salmon et al. (2018)	Mixed methods	Good quality	This study demonstrates that for people engaging in problem behaviour (disordered gambling), behaviour regulation is a product of motivation, fuelled by discontinuity-induced nostalgia and incremental beliefs, believing that behaviour is alterable. These results suggest the utility of nostalgia as a behaviour change agent

TABLE 4 (Continued)

Study	Study type	Study grade in the context of the current review	Evaluation notes
Salmon and Wohl (2020)	Mixed methods study	Good quality	The results of this mixed methods study suggest the behaviour change utility of 'looking back' or 'nostalgising' about life before addiction (problem gambling), though this effect is dependent on personal experience. The responses of participants randomly assigned to the past-focused condition (vs. the future-focused condition) were coded into two clusters. Participants in the first cluster indicated that life was more ideal before addiction took over. Participants in the second cluster, however, expressed that life was no better before addiction took over. Those in cluster one also felt more ready to change their gambling behaviour than those in cluster two. In all 'a past focus that elicits nostagia may have the greatest behaviour change utility among gamblers who have a positive past they desire to reclaim'
Sharp et al. (2018)	Qualitative	Good quality	The study presents data that are useful for health-related behaviour change initiatives (i.e. instilling positive diet and exercise habits) among people with unhealthy lifestyles. Participants provided feedback about a gender-sensitized (men only) health promotion program. One of the identified themes was the usefulness of harnessing nostalgia for past masculinities? Nostalgia was described for its role in motivating participants to connect with their past, athletic selves via the health program
Viladrich and Tagliaferro (2016)	Mixed methods	Good quality	This research employed a mixed methods design, allowing for quantitative measures to complement qualitative/narrative data. The results suggest a possible relationship between 'nostalgic' foods, unhealthy diets and body dissatisfaction among Latina's living in the USA
Wohl et al. (2018)	Longitudinal	Good Quality	The parallel longitudinal studies presented here provide evidence that suggests the value of nostalgia as a resource that promotes behaviour change among people with problematic (a) gambling and (b) alcohol use. Participants in the discontinuity/nostalgia condition at T1 were more likely to report having made a quit attempt at T2

Note: Study grade categories are: (1) Good Quality Study, (2) Lesser Quality Study and 3) Not Valid, Reliable or Applicable.

The first identified theme depicted nostalgia as an agent of behavioural change. Specifically, Theme I comprised studies that reported an increase in both readiness to change and action to change unhealthy behaviour among people who nostalgized about a time in their life when they were healthier. For these individuals, nostalgia placed life lived without the unhealthy behaviour in a positive, idealistic light, which is contrasted against the stress of the life currently lived with the unhealthy behaviour in their repertoire. Implicit in the mental contrasting that was prevalent in the Theme I studies was participants' sense that their unhealthy behaviour had created a fundamental self-discontinuity (i.e. disconnectedness between one's past and present self; Chandler, 1994; Iyer & Jetten, 2011; Vignoles, 2011). Importantly, a sense of self-discontinuity can create instability, confusion and inconsistencies in morals and values (Dunkel, 2005; Milligan, 2003; Sedikides et al., 2023) as well as discontent with the self (Davis, 1979; Sedikides et al., 2023; Sedikides, Wildschut, Gaertner, et al., 2008). The nostalgizing that ensues from feeling self-discontinuous engenders an approach to motivation (Sedikides et al., 2016; Sedikides & Wildschut, 2020, 2023). In the context of unhealthy behaviours, the resulting motivation is directed to approaching behavioural change. This was exemplified in research by Kim and Wohl (2015), who showed that self-discontinuity-induced nostalgia motivated readiness to change among people living with a gambling disorder as well as those living with an alcohol use disorder.

The second identified theme was consistent with the idea that, under certain conditions, nostalgia may undermine healthy behaviour change. Specifically, when nostalgia is focused on the perceived benefits of engaging in unhealthy behaviour, or it is focused on situational contexts that involved unhealthy behaviour, people may be drawn to their unhealthy behaviour. For instance, Latino immigrants in the United States, who reported that they drank excessively, linked their drinking behaviour to nostalgia for everyday living in their native country—everyday living that was associated with alcohol consumption with friends and family (Lee et al., 2006). Consequently, Theme II provides nuance to the existing social psychological research on nostalgia, which tends to position the emotion as to have broad social, existential and self-oriented benefits (or functions; Routledge et al., 2012; Sedikides & Wildschut, 2018, 2019; Wildschut & Sedikides, 2020). Put differently, Theme II suggests that nostalgizing is not a panacea. This finding is in line with recent work showing that there is indeed a dark side to nostalgia. For instance, Li et al. (2023) showed that nostalgizing increases bribe-taking behaviour via the sense of social connectedness that nostalgia elicits. They argue that social connectedness (elicited by way of nostalgia) increases social trust and that bribe-taking is a manifestation of that trust. In a similar way, individuals may be led down the path of unhealthy behaviour (e.g. smoking) by people who they trust when in a nostalgic (and thus socially connected) frame of mind.

# Implications and knowledge needs

Our findings expand a growing body of research on the social psychology of health and well-being (Haslam et al., 2009) by furthering understanding of the consequences of nostalgising. Typically, social psychological research on this emotion positions it as a powerful tool for improving psychological health (Routledge et al., 2012). The results of the current review, however, suggest that nostalgia may also have negative consequences for individuals' health and well-being, and thus a focus on the future (as opposed to the past) may be more beneficial. Specifically, a future focus may be especially helpful for people who nostalgize for the perceived benefits they reaped from engaging in unhealthy behaviour, such as the excitement of gambling or the social connectedness they felt when drinking. Results from the current review indicate that nostalgia rooted in unhealthy behaviour (e.g. unhealthy eating, excessive drinking, smoking; Theme II) may precipitate continued or accelerated engagement in the unhealthy behaviour. In such contexts, it might be beneficial to alert individuals to discrepancies between engagement in unhealthy behaviour and their future goals. Such discrepancies can prompt cognitive dissonance, which increases motivation to reconcile their behaviour to be consistent with these values and goals (Miller & Rollnick, 2013). The net result is likely to be a cessation of the unhealthy behaviour.

One barrier to a future-oriented approach to behaviour change is that some individuals engaged in unhealthy behaviour report difficulty planning for their future (Hodgins & Engel, 2002). This is due, in part, to an imagined future typically lacking detailed and contextual information (Noel et al., 2017), which can produce its own stress (e.g. 'what might a future without drinking hold?'). Moreover, a future focus may even lead people to believe that their quality of life will be diminished without unhealthy behaviour (Browne et al., 2017; Salmon & Wohl, 2020). The past, however, is concrete, as it was experienced. It is for this reason that Miller and Rollnick (2013) discuss 'looking back' as a Motivational Interviewing tool that can build momentum towards change. The looking back process is meant to elicit an affect that can be leveraged to motivate change. This process is particularly relevant in studies categorized into Theme I of the present review.

Indeed, we suggest, based on Theme I, that there is behaviour change utility in people's sentimental longing for a past lived without their unhealthy behaviour in their repertoire—nostalgising that could be leveraged by treatment providers. Reviewed research (Kim & Wohl, 2015; Wohl et al., 2018) demonstrates that there are health benefits in nostalgizing about life led before engaging in unhealthy behaviour. Consequently, it may behave treatment providers to help their client contrast their current unhealthy behaviour with a healthier, positive past. This process can help re-establish the values of people engaged in unhealthy behaviour and reaffirm their goals for the future (Rosengren, 2012; Sharp et al., 2018), but only when guided to reflect on a positive past without the unhealthy behaviour.

#### Limitations and future directions

We note some limitations of this review. First, only four records (Kim & Wohl, 2015; Salmon et al., 2018; Salmon & Wohl, 2020; Wohl et al., 2018) explicitly mentioned how sample size was determined and used open science practices (e.g. posting data and materials to an online public repository). To increase the replicability of quantitative research findings in this domain an a priori power analysis should be conducted in advance and reported (Open Science Collaboration, 2015). Second, most of the findings categorized into Theme II stemmed from qualitative research; the lone exception was Viladrich and Tagliaferro (2016), who used a mixed method design. Consequently, conducting a metaanalysis and determining the size of the effect (particularly for Theme II) was not feasible. We encourage researchers to conduct quantitative assessments on the link between nostalgia for one's unhealthy behaviour and the possible continuance of that unhealthy behaviour to assess more effectively the causal relationship between the variables. Experience sampling may be useful, as assessments are made in the natural flow of real life. Lastly, although experiential studies have been conducted on the link between nostalgia and behaviour change (Kim & Wohl, 2015), there was a distinct lack of longitudinal research. Only two of the 14 identified studies assessed whether nostalgia influences behaviour change over time (Wohl et al., 2018, Studies 1 and 2). Both these studies measured nostalgia for the self that existed prior to disordered gambling (Study 1) and excessive drinking (Study 2). We located no longitudinal research on the relationship between nostalgia for unhealthy behaviour and the maintenance of that behaviour (Theme II). Longitudinal designs would allow researchers to detect developments or changes in the characteristics of the target population at both the group and the individual level, establishing sequences of events. We hope the current systematic review is a springboard for such initiatives, and by doing so, helps explicate the role of nostalgia (and its content) in the engagement of unhealthy behaviour.

#### CONCLUSION

We reported a systematic review and narrative analysis of a growing body of work that has directed attention to the behavioural implications of a past focus. The outcome of this endeavour underscores the need to consider what people are reminiscing about, that is, the content of nostalgia. The results indicate

that merely knowing that a person is longing for their past is insufficient to determine the outcome of that nostalgizing for behaviour change. When the specific content of the nostalgizing is understood, variance in the nostalgia-behaviour change link can be better accounted for. We showed that nostalgia may be a double-edged sword. It motivates healthy behaviour change when focused on a healthier past but can undermine healthy behaviour change when focused on the perceived benefits of the unhealthy behaviour. The content of nostalgia matters when assessing the nostalgia-unhealthy behaviour link.

# **AUTHOR CONTRIBUTIONS**

Michael J. A. Wohl: Conceptualization; investigation; funding acquisition; writing – original draft; methodology; validation; writing – review and editing; formal analysis; project administration; data curation; supervision; resources. Mackenzie E. Dowson: Conceptualization; investigation; writing – original draft; methodology; validation; visualization; writing – review and editing; formal analysis; project administration; data curation. Melissa M. Salmon: Conceptualization; investigation; writing – original draft; methodology; validation; visualization; writing – review and editing; formal analysis; project administration; data curation. Constantine Sedikides: Conceptualization; investigation; funding acquisition; writing – original draft; methodology; validation; writing – review and editing; formal analysis. Tim Wildschut: Conceptualization; investigation; funding acquisition; writing – original draft; methodology; validation; writing – review and editing; formal analysis.

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#### CONFLICT OF INTEREST STATEMENT

The authors declare that there are no potential conflicts of interest with respect to authorship and/or publication of this article.

# DATA AVAILABILITY STATEMENT

Data haring is not applicable to this article as no new data were created or analysed in this study. We preregistered this systematic review on PROSPERO: https://www.crd.york.ac.uk/prospero/display\_record.php?RecordID=331823.

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