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Nostalgia is a social, self-relevant, and bittersweet (although mostly positive) emotion that arises when reflecting on fond past memories and serves key psychological functions. The majority of evidence concerning the prevalence, triggers, and functions of nostalgia has been amassed in samples from a handful of largely Western cultures. If nostalgia is a fundamental psychological resource, it should perform similar functions across cultures, although its operational dynamics may be shaped by culture. This study ($N =$ 2,606) examined dispositional nostalgia, self-reported triggers of nostalgia, and functions of experimentally induced nostalgia in young adults across 28 countries and a special administrative region of China (i.e., Hong Kong). Results indicated that nostalgia is frequently experienced across cultures, albeit better valued in more-developed countries (i.e., higher national wealth and life-expectancy). Nostalgia is triggered by psychological threats (especially in warmer countries), sensory stimuli (especially in more-developed countries), and social gatherings (especially in less-developed countries). The positive or negative affect prompted by experimentally induced nostalgia varied by country, but was mild overall. More importantly, recalling a nostalgic (vs. ordinary) memory increased social connectedness, self-continuity, and meaning in life across cultures. In less-developed countries, recalling an ordinary memory also conferred some of these functions, reducing the effect size of nostalgia. Finally, recalling a nostalgic (vs. ordinary) memory augmented state satisfaction with life in countries with lower quality of living (i.e., lower life-expectancy and life-satisfaction). Overall, findings confirm the relevance of nostalgia across a wide range of cultures and indicate cultural nuances in its functioning.

Public Significance Statement
This study shows that nostalgia—a bittersweet emotion prompted by fond memories from one's personal past—is a common experience across a wide range of cultures. Experiencing nostalgia has short-term psychological benefits across many cultures, which may be more or less pronounced depending on a country's level of development and quality of living. As such, nostalgia may make a psychological contribution towards UN Sustaintable Development Goal 3: Good Health and Well-being.

The self-relevant and social emotion of nostalgia is enjoying a come-back after centuries of disreputability and neglect. A burgeoning literature attests to the prevalence of nostalgia in everyday (or at least weekly) life and its psychological functions in buffering threats and boosting well-being (Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015; Wildschut & Sedikides, 2023a, 2023b). Thus far, most of this literature has focused on relatively individualistic, developed, and Western cultures. Although evidence indicates that people across a range of countries conceptualize nostalgia similarly (Hepper et al., 2014), questions regarding cross-cultural variation in the emotion's prevalence and functioning remain largely unanswered. The purpose of this article is to establish whether the prevalence, triggers, and psychological functions of nostalgia generalize across 29 cultural regions spanning five continents, and to examine the nature and source of cross-cultural variability, if any. In so doing, we aim to clarify nostalgia's place in the broader cultural context.

Nostalgia

The construct of nostalgia has had a difficult upbringing, but has matured and found its feet in the last two decades. In its first appearance in formal literature around 800 BC, Homer's (Trans., 1921) Odysseus drew on memories of his home and family to galvanize and motivate him during his long and arduous journey. The term itself was coined much later to identify a very different condition when Hofer (1688/1934) combined the Greek words nostos ("homecoming") and algos ("pain") to describe the adverse symptoms of Swiss mercenaries fighting far from home. In the ensuing centuries, nostalgia continued to have a negative reputation, labeled as a medical disease, neurological malfunction, or psychiatric disorder (Batcho, 2013; Dodman, 2018; Sedikides et al., 2004). Only from the late 20th century was nostalgia understood as separate from homesickness and depression (Davis, 1979; Kaplan, 1987), and it was redefined as "sentimental longing or wistful affection for the past" (The New Oxford Dictionary of English, 1998, p. 1266). Scholars now consider nostalgia to be a complex, social, and self-relevant emotion that is bittersweet (albeit mostly positive) in valence (Batcho, 2013; Leunissen, 2023; Sedikides & Wildschut, 2023; Srivastava et al., 2023; Van Tilburg, 2022).

Laypersons' conceptualizations and narratives dovetail with these recent definitions, indicating that the emotion of nostalgia typically entails reflecting on a fond, somewhat rose-colored, and personally meaningful memory from one's past, usually focused on childhood or close relationships (Hepper et al., 2012; Wildschut et al., 2006). Importantly, this broad conceptualization is shared across cultures: Hepper et al. (2014) found that the most prototypical features of

nostalgia generalized across young adult samples in 18 countries and five continents. The presence of cognitive features in the nostalgia prototype, such as the emotion's object, causes, and consequences, marks nostalgia as a complex (not basic) emotion (Oatley & Johnson-Laird, 2011). Hereafter, we use "nostalgic" to refer to the appraisal of a memory, item, style of remembering, or specific recall episode as evoking nostalgia. A further sign that nostalgia is a normal emotion (and not a pathology) is its prevalence in everyday life. For example, 79% of U.K. undergraduates, and no less than 50% of U.K. adults in all age categories between 18 and 90, report experiencing nostalgia at least once per week (Hepper et al., 2021; Wildschut et al., 2006). Proneness to nostalgia also varies on a trait level in the population (Cheung et al., 2017; Fetterman et al., 2021; Juhl et al., 2020).

Evidence indicates that the affective signature of nostalgia is bittersweet, with the "sweet" typically outweighing the "bitter." Laypersons view happiness, longing, and loss as the most prototypical features of nostalgia, with peripheral features including comfort, warmth, calmness, regret, and sadness (Hepper et al., 2012). Again, this profile largely replicates across cultures (Hepper et al., 2014). Laypersons also consider nostalgia most similar to positive and approach-oriented emotions, such as gratitude and self-compassion (Van Tilburg et al., 2019). Content analyses of nostalgia narratives among Western participants reveal a similar mix of positive (e.g., content, joy, tenderness, serenity) and negative (e.g., sadness, loss) affect (Havlena & Holak, 1991; Madoglou et al., 2017; Wildschut et al., 2006), most often in a redemptive (i.e., negative overcome by positive) trajectory (Wildschut et al., 2006). Moreover, in an experience sampling study involving twice-daily assessments, 72% of nostalgic (American) participants recounted increases in positive affect and 51% increases in negative affect, with older participants reporting larger affective discrepancy than younger ones (J. R. Turner & Stanley, 2021). Finally, a large number of studies, primarily conducted in the United States and United Kingdom, have induced nostalgia using the Event Reflection Task (Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015; Wildschut et al., 2006; Wildschut & Sedikides, in press), which instructs participants to recall and think or write about a personally nostalgic event (compared to a control memory, such as an ordinary, positive, or lucky event), or using nostalgic (vs. control) music (Cheung et al., 2013; Routledge et al., 2011; Sedikides et al., 2022). Compared to control conditions, nostalgia generally increases positive affect but does not influence negative affect (Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015). This finding was reinforced by an integrative data analysis on data from 41 published experiments (Leunissen et al., 2021), where nostalgia also increased ambivalent affect (the minimal value of positive and negative affect; Larsen et al., 2017). In all, nostalgia is far from

a simple emotion. Instead, it has a complex hedonic profile and, more importantly, is regarded as a psychological resource that serves to reestablish psychological homeostasis. We turn to this issue next.

Nostalgia as a Psychological Resource

Nostalgic memories act as a resource, or reservoir, into which people can dip to boost or restore psychological well-being (Hepper & Dennis, 2023; Layous & Kurtz, 2023; Sedikides & Wildschut, 2020; Wildschut & Sedikides, 2023b). By reminding people of the cherished relationships, successes, or good times that they experienced in the past, nostalgia helps to provide and rebuild a sense that they have supportive social connections, the future is bright, and life is meaningful. Hence, nostalgia can confer short-term boosts to well-being. Moreover, nostalgia serves a homeostatic function. That is, psychological threat triggers nostalgia, which in turn restores well-being (Van Dijke et al., 2015; Wildschut et al., 2011; Wildschut & Sedikides, 2020, 2023a). In this view, the link that Hofer (1688/1934) and others made between nostalgia and adverse symptoms reflected, not effects of nostalgia, but the opposite causal direction: that nostalgia was being recruited to thwart and buffer those symptoms. More formally, scholars have identified three primary (and interlinked) functions of nostalgia. These are social, self-related, and existential meaning (Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015; Sedikides & Wildschut, 2018, 2019). The same homeostatic principle underlies each of these.

Social Connectedness

Nostalgia is a social emotion. People and close relationships are at the heart of nostalgic memories (Abeyta et al., 2015; Madoglou et al., 2017). Hence, when engaging in nostalgic reverie, the mind is "peopled" (Hertz, 1990, p. 195). Important persons from one's life feel closer, restoring a sense of security and social competence, and motivating one to approach others, form social bonds, and even help strangers (Juhl & Biskas, 2023). Specifically, inducing nostalgia (vs. control) increases perceived connectedness to others (Hepper et al., 2012; Wildschut et al., 2006), attachment security (Wildschut et al., 2006, 2010), trust and contact intentions toward a stigmatized outgroup (R. N. Turner & Stathi, 2023), interpersonal competence and social goals (Abeyta, Routledge, & Juhl, 2015; Wildschut et al., 2006), perceptions of romantic relationship quality (Evans et al., 2022), the courage to seek help from strangers (Juhl et al., 2021), as well as empathy for victims, charitable intentions, and actual donations (Green et al., 2021; Zhou, Wildschut, Sedikides, Shi, et al., 2012). Such effects are also triggered by, and strengthened under, threat. For example, loneliness was the most cited trigger of nostalgia among undergraduates (Wildschut et al., 2006, Study 2), and experimentally induced loneliness led to higher nostalgia (Study 4). Further, nostalgia buffers (suppresses) the association between loneliness and perceived lack of social support or unhappiness in both cross-sectional and experimental contexts (Abeyta et al., 2020; Zhou et al., 2008, 2022).

Self-Related Functions

Nostalgic memories invariably include the self as protagonist, and typically the self-representation in such memories is positive (Wildschut et al., 2006). Accordingly, nostalgia is a rich source of validation for the self and helps to weave a narrative of one's identity between the past and present. Research shows that nostalgia (vs.

control) increases explicit and implicit self-esteem (Hepper et al., 2012; Vess et al., 2012; Wildschut et al., 2006) and past–present self-continuity (i.e., a sense of connection between one's past and present selves; Sedikides et al., 2016; Van Tilburg et al., 2019). Moreover, this validation extends to the future: nostalgia (vs. control) augments optimism (Cheung et al., 2013), openness (Hotchin & West, 2021), inspiration (Evans et al., 2021; Stephan et al., 2015), motivation to pursue personally relevant goals (Sedikides et al., 2018; Van Dijke et al., 2019), and global self-continuity (i.e., a sense of connection among one's past, present, and future selves; Hong et al., 2021, 2022). Again, this pattern buffers against threat. For example, nostalgia reduces defensiveness to negative performance feedback (Vess et al., 2012). Moreover, manipulated self-discontinuity (e.g., rapidly changing lifestyle) triggers nostalgia, and nostalgia buffers its impact on self-continuity (Sedikides, Wildschut, Routledge, & Arndt, 2015).

Existential Meaning

Nostalgic reflection reminds people of momentous times and important others in their lives, and so solidifies the perception that life is meaningful. Experiments show that nostalgia (vs. control) increases the sense of meaning in life (Hepper et al., 2012; Routledge et al., 2011; Van Tilburg et al., 2013) and reduces the need to search for meaning (Routledge et al., 2012). Once more, nostalgia is triggered by threats to meaning, including experimentally induced meaninglessness (Routledge et al., 2011), boredom (Van Tilburg et al., 2013), and disillusionment (Maher et al., 2021). Subsequently, nostalgia buffers against meaning threat: After a mortality salience induction, participants who were naturally high (vs. low) in nostalgia reported greater meaning and showed lower death-thought accessibility (Routledge et al., 2008) as well as lower death anxiety (Juhl et al., 2010). As Davis (1979, p. 41) put it, nostalgia "quiet[s] our fears of the abyss."

Summary and Extensions

Overall, experimental evidence indicates that people naturally recruit nostalgia in the face of psychological threats, and that nostalgia in turn restores the aspects of well-being that were threatened. In a meta-analysis of 47 experiments that induced nostalgia, Ismail et al. (2020) obtained reliable effects across the key dependent measures, including a large effect on self-continuity ($d = 0.81$) and medium effects on social connectedness ($d = 0.72$), meaning ($d = 0.77$), self-esteem ($d = 0.50$), and optimism ($d = 0.38$). The homeostatic pattern has also been broadened to the physiological domain. For example, nostalgia was higher on days that had colder temperature (Zhou, Wildschut, Sedikides, Chen, et al., 2012, Study 1) and when in a colder than warmer room (Study 2). Further, induced nostalgia increased perceived warmth, room temperature estimates, and tolerance in a cold pressor test (Studies 3–5). Moreover, nostalgia was evoked by adverse weather (naturally occurring or induced via audio-recording) and buffered the ensuing distress (Van Tilburg et al., 2018). Finally, induced nostalgia promoted health optimism and consequent engagement in physical activity (Kersten & Cox, 2023).

Why Might the Operation of Nostalgia Generalize Cross-Culturally?

The above-reviewed literature points to nostalgia as serving crucial regulatory functions. Self-conscious emotions are theorized to

have evolved to regulate socially relevant behavior in complex social hierarchies (Gilbert, 2000; Goetz & Keltner, 2007; Tracy & Beall, 2020; Tracy et al., 2020). Although the link between biological and cultural evolution is tenuous, findings indicate that emotions such as shame, guilt, embarrassment, pride, and jealousy are conceptualized similarly across cultures (Cowen & Keltner, 2017; Edelstein & Shaver, 2007; Fontaine et al., 2007) and are communicated via largely culturally shared facial expressions (Cordaro et al., 2020; P. Ekman, 1993; Haidt & Keltner, 1999; Tracy & Robins, 2008). Nostalgia, which also meets many self-conscious emotion criteria (Van Tilburg, Wildschut, & Sedikides, 2019), could fit neatly within this framework, given that it facilitates self-regulation and prosocial behavior. Similarly, emotional states that co-occur in nostalgia are present in language across many cultures, and reflect both internally referent emotions (e.g., longing, contentment, suffering—known as ego-focused) and socially oriented emotions (e.g., adoration, empathy—known as social control; Hupka et al., 1999). Indeed, evidence of nostalgia is apparent in cultural practices, literature, and art across the globe (for reviews see: Batcho, 2023; Hepper et al., 2014; Jacobsen, 2020). Importantly, people in 18 cultures cohered in their understanding of nostalgia (Hepper et al., 2014), indicating that the construct has a shared meaning across cultural contexts. This provides a basis for examining its operation across cultures. Still, more would be needed to establish the emotion's cross-cultural generality. If nostalgia is a naturally occurring, adaptive emotion, then, across a range of cultures, it should (a) manifest frequently, (b) be triggered by threatening and sensory stimuli, and (c) boost well-being.

Thus far, most empirical research on these three criteria has focused on participants in Western cultures, but researchers have begun to study nostalgia in a range of cultures (Sedikides & Wildschut, 2022). Crucially, though, none of these studies compared nostalgia or its effects across cultures. In terms of prevalence, trait nostalgia has been measured reliably in China, Greece, Ireland, Japan, Russia, The Netherlands, United Kingdom, and the United States (Holak et al., 2005; Holak & Havlena, 1998; Kelley et al., 2022; Kusumi et al., 2010; Madoglou et al., 2017; Routledge et al., 2008; Seehusen et al., 2013; Van Tilburg et al., 2013; Zhou et al., 2008). In terms of triggers, participants' self-reports of triggers originated in U.K. samples (Wildschut et al., 2006, 2010). Nostalgia is prompted by varied experimentally induced threats or discomfort in China, Greece, Ireland, the Netherlands, United Kingdom, and the United States (Abakoumkin et al., 2017; Van Tilburg et al., 2013; Zhou et al., 2008; Zhou, Wildschut, Sedikides, Chen, et al., 2012), by music or lyrics in the Netherlands, United Kingdom, and the United States (Abeyta & Routledge, 2016; F. S. Barrett et al., 2010; Cheung et al., 2013; Zhou, Wildschut, Sedikides, Chen, et al., 2012), by scents and food in the United States (Reid et al., 2015; Zhou et al., 2019), and by visual stimuli such as adverts, reading materials, and social media in Australia, China, Japan, and United States (Kusumi et al., 2010; Lasaleta et al., 2014; Marchegiani & Phau, 2013; Wildschut et al., 2018; Zhou, Wildschut, Sedikides, Shi, et al., 2012). In the United States, nostalgia is also higher on days when participants have seen old friends, and during interactions with friends or family compared to when working or studying (Newman et al., 2020).

In terms of functions, numerous experiments have shown comparable short-term effects of nostalgia on self-reported and behavioral outcomes (e.g., social connectedness, meaning) in the same countries as above (Abakoumkin et al., 2017, 2019; Hart et al.,

2011; Routledge et al., 2011; R. N. Turner et al., 2013; Van Tilburg et al., 2013; Wildschut et al., 2006; Zhou, Wildschut, Sedikides, Shi, et al., 2012), as well as Denmark (Sedikides et al., 2018) and Syrian refugees in Saudi Arabia (Wildschut et al., 2019). Nostalgia has also been induced with the aforementioned Event Reflection Task (Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015) in Australia (Iyer & Jetten, 2011), although the dependent measures differed from those of other studies above. Finally, self-reported nostalgia after recalling a "special moment" correlated with optimism, relatedness, and vitality in Mexico (Puente-Díaz & Cavazos-Arroyo, 2021).

At first glance, then, the evidence so far appears consistent with nostalgia operating in a similar way in a range of countries. However, across all three criteria, the number of studies conducted with United Kingdom and United States participants vastly outnumbers the studies conducted in other countries, and entire continents and many cultures are missing from the evidence base. Moreover, no systematic comparisons of nostalgia across cultures have been conducted. For example, although nostalgia can be measured in numerous cultures, its relative prevalence or functions in different cultures are unknown. The present investigation takes this next step to address such questions empirically.

Why Might the Operation of Nostalgia Vary Cross-Culturally?

We suggested above that, if nostalgia is psychologically adaptive, it should generalize across cultures. However, there are also good reasons to expect cross-cultural variability in the experience and operation of emotions. Even emotions that are adaptive and fundamental are shaped by the sociocultural context in the way that they are interpreted, communicated, and used for regulation (L. F. Barrett et al., 2007; Krys et al., 2016; Ma et al., 2018; Nelson & Russell, 2013). We focus on two reasons why the experience or operation of nostalgia might vary across cultures. One pertains to the cultural orientation of self-construals, the other to the varying presence of psychological threats in different countries.

Cultural Orientation

A dominant framework for understanding cross-cultural variation in self-relevant processes (including emotions) focuses on independent versus interdependent self-construals (Markus & Kitayama, 1991, 2010). This framework holds that people differ in the degree to which they account for relational ties when construing the self. Persons with independent self-construal (promoted by individualistic cultures such as most North American and Western European countries) view the self as separate from the social context, whereas persons with interdependent self-construal (promoted by collectivistic cultures such as most East-Asian and Hispanic countries) define the self primarily in terms of relationships or social groups. As such, people's well-being mainly derives from personal happiness or satisfaction in more individualistic cultures, but hinges on their relationships with others in more collectivistic cultures (Kwan et al., 1997). Most research has compared North-American to East-Asian samples. For example, internally oriented and socially disengaging positive emotions (e.g., pride) promoted U.S. participants' subjective well-being, whereas relationally oriented and socially engaging positive emotions and attitudes (e.g., friendly feelings) better

predicted Japanese participants' well-being (Kitayama et al., 2006; Uchida & Kitayama, 2009).

Cultural differences in self-construal contribute to normativity and desirability of different emotions. One example is pleasure. Independent people (e.g., European North Americans) are more likely to regard positive emotions as desirable and negative emotions as undesirable, which motivates them to maximize positive affect and minimize negative affect (Eid & Diener, 2001; Miyamoto et al., 2017). In contrast, interdependent people (e.g., East-Asians) are more likely to think that positive emotions have negative attributes (An et al., 2017; Miyamoto & Ma, 2011), view negative emotions as less undesirable (Eid & Diener, 2001), and show weaker adverse effects of experiencing negative emotions (Kuppens et al., 2008). Moreover, interdependent people may have greater emotional complexity—co-occurrence of positive and negative emotions—than independent people (Grossmann & Ellsworth, 2017).

Given the well-established cultural differences in self-construal and emotion, it is plausible that the prevalence, triggers, and consequences of nostalgia might vary by a culture's dominant self-construal. For example, as a mixed emotion (Hepper et al., 2012; Leunissen et al., 2021; Sedikides & Wildschut, 2016), nostalgia might be valued more highly in collectivistic cultures. Given that norms and desirability influence the extent to which people seek, notice, and regulate particular emotions in themselves and others (Eid & Diener, 2001), this higher value might manifest in higher prevalence in collectivistic cultures. Nostalgia might be triggered more often by internal prompts (e.g., negative affect) in individualistic cultures and by social contexts (e.g., family gatherings) in collectivistic cultures. This is analogous to the finding that, among collectivistic (vs. individualistic) cultures, shame and pride pertain more often to events experienced by close others, and occur more often in public than private contexts (Fischer, 1999; Wong & Tsai, 2007).

In terms of psychological functions, the focus of nostalgic memories or the benefits they foster might also reflect the dominant self-construal. For example, in relatively collectivistic (vs. individualistic) cultures, nostalgia might prompt more ambivalent affect because of the relative openness to negative and mixed emotions. In accord with this notion, negative (peripheral) features of nostalgia were rated as more prototypical among East-Asian countries than other groups of countries, whereas positive (central) features did not differ systematically (Hepper et al., 2014). In the only relevant empirical examination that compared effects of nostalgia across cultures, Leunissen et al.'s (2021) integrative data analysis found that effects of nostalgia (vs. control) on positive and negative affect did not differ in the six Chinese studies compared to the 35 Western studies. No other investigations have compared cultures directly. Further, nostalgia might serve more to foster social connectedness in collectivistic cultures and self-esteem in individualistic cultures. This parallels findings that Asian participants recall more socially oriented autobiographical memories than Westerners (Ross & Wang, 2010) and that after exposure to an equivalent emotional scenario, Filipino (collectivistic) employees focused on relationship-building, whereas Dutch (individualistic) employees focused on self-protective withdrawal from others (Bagozzi et al., 2003).

Presence of Threats

A second set of cultural influences on nostalgia pertain to its homeostatic, threat-buffering function (Wildschut & Sedikides,

2023a, 2023b). In terms of prevalence, if nostalgia is something to which people turn in times of threat, then proneness to it might be higher in countries that experience more frequent threat (operationalized in terms of fewer resources/wealth, more ill-health, less happiness overall, or colder temperature). Such a finding would be consistent with evidence that nostalgia is higher among individuals who feel lonely (Zhou et al., 2008), experienced recent life changes (Sedikides, Wildschut, Routledge, & Arndt, 2015), or on colder or bad-weather days (Van Tilburg et al., 2018). There is no clear reason to expect country-level threats to moderate the types of triggers of nostalgia, except perhaps higher average ratings in countries exposed to higher (vs. lower) threat. In terms of functions, in countries with greater threat indices, state nostalgia (induced by recalling a nostalgic event in one's life) might also be more potent in boosting well-being. Experimental research shows that the effects of nostalgia are often stronger under conditions of threat (Hepper et al., 2021; Routledge et al., 2008; Van Dijke et al., 2019) and benefit people in vulnerable populations or life circumstances (Wildschut & Sedikides, 2023b). Findings relevant to these questions would have implications for understanding how people maintain well-being across cultures, and could inform interventions.

Overview and Hypotheses

Our multilaboratory investigation aimed to understand the generalizability and replicability of nostalgia patterns across cultures. We collected primary data from 28 countries and a special administrative region of China (i.e., Hong Kong) across five continents.[1] We recruited participants from university student populations to maintain consistent age ranges and educational levels (Hepper et al., 2014; Van de Vijver & Leung, 1997). We also gathered data from external sources on country-level factors that might moderate the role of nostalgia as described above. For cultural orientation, we used established levels of individualism versus collectivism. For threat, we used indicators of a country's economic, physical, and emotional well-being: wealth (i.e., gross domestic product per capita; GDP), average life expectancy, country-level life satisfaction, and average temperature. Overall, our primary hypotheses anticipated that established effects of nostalgia would emerge across a majority of cultures. Our secondary hypotheses concerned country-level moderators of these nostalgia effects. More specifically, we had three main objectives.

First, we sought to establish the relative prevalence of nostalgia across cultures. Previous studies in Western cultures indicate that nostalgia is a frequent experience (more than once a week for most individuals; Hepper et al., 2021; Wildschut et al., 2006), and nostalgia features in cultural and arts practices across the world (Batcho, 2023; Hepper et al., 2014; Jacobsen, 2020). Thus, we expected the median frequency of nostalgia to be once a week or more across most cultures (Hypothesis 1a [H1a]). We also assessed trait nostalgia using two of the most widely used measures—the Southampton Nostalgia Scale (SNS; F. S. Barrett et al., 2010; Routledge et al., 2008) and the Batcho Nostalgia Inventory (BNI; Batcho, 1998)—and tested for country-level predictors of nostalgia

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[1] For brevity and readability we use the term "country" hereafter to refer to the cultural region samples, while acknowledging that Hong Kong is a Special Administrative Region of China and some other samples may reflect more specific cultural regions or populations within their country.

levels. Drawing on the regulatory model of nostalgia (Wildschut & Sedikides, 2023a), we hypothesized that nostalgia would be higher in countries that have lower wealth, life expectancy, satisfaction, and colder temperatures (Hypothesis 1b [H1b]).

Second, we investigated factors that trigger nostalgia in different cultures. We collated triggers identified in the nostalgia literature (e.g., feeling sad, listening to music, community events), and asked participants to rate how often they feel nostalgia when in that situation. We examined how these triggers group into factors to add coherence to the literature and facilitate cross-cultural comparisons. We also gave participants the opportunity to list their own triggers in an exploratory investigation. Based on evidence relating to shame and pride (Fischer, 1999; Wong & Tsai, 2007), we hypothesized that participants in individualistic cultures would endorse more individual triggers of nostalgia (i.e., negative affect, insecurity, sensory—these experiences are proximally personal, even if they were elicited distally by social or collective events), whereas those in collectivistic cultures would endorse more communal ones (i.e., social interaction) (Hypothesis 2 [H2]). We made no hypotheses about the effects of country threat indices on triggers.

Third, we examined the extent to which the documented state-level psychological benefits of nostalgia generalize across cultures. To this end, we conducted an experiment using the Event Reflection Task (Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015), whereby participants were randomly allocated to write about either a personally nostalgic or a personally ordinary memory. This task is the most commonly used in the nostalgia literature (Wildschut & Sedikides, in press) and its effects are typically not explained by positivity (Leunissen et al., 2021). We collected self-reports of state nostalgia, positive and negative affects, state satisfaction with life (which arguably captures hedonic well-being), and a range of psychological functions identified in prior nostalgia research (i.e., social connectedness, meaning, self-esteem, self-continuity, optimism—which arguably capture aspects of eudaimonic well-being; Hepper & Dennis, 2023). As a manipulation check, we first expected that, across cultures, participants in the nostalgia (vs. ordinary) condition would report higher state nostalgia.

Relying on prior research, we anticipated nostalgia to generate more positive affect, but not negative affect, compared to the control condition (Hypothesis 3a [H3a]). Nostalgia might also prompt greater ambivalence than control (Hypothesis 3b [H3b]). However, these patterns might vary across cultures. Based on prototypicality of negative features in Hepper et al.'s (2014) findings, we expected that participants in East-Asian (vs. non-East-Asian) countries or regions would report higher negative affect or ambivalence in the nostalgia than control condition (Hypothesis 3c [H3c]).

We hypothesized that, across cultures, participants in the nostalgia (vs. ordinary) condition would report higher levels of each psychological function (Hypothesis 4a [H4a]). Further, we tested the novel proposition that cultural factors might moderate some of these functions. Specifically, we proposed that nostalgia (compared to control) would engender more self-related functions (i.e., self-esteem, optimism, inspiration) in cultures that are relatively more individualistic (vs. collectivistic), and would engender more communal functions (i.e., social connectedness) in cultures that are relatively more collectivistic (vs. individualistic) (Hypothesis 4b [H4b]). Given that nostalgia serves as a buffer against various psychological threats, we also examined the notion that its psychological benefits would be stronger in countries that had lower wealth, life expectancy, satisfaction, or temperature (Hypothesis 4c [H4c]).

Method

Participants

We tested 2,606 university students (1,696 women, 869 men, and 41 who did not specify their gender and so might include those who identify as nonbinary; $M_{age} = 22.78$ years, $SD_{age} = 5.89$ years) in 29 cultural regions (Table 1).[2] We aimed to recruit a minimum of 80 participants in each country or cultural region and exceeded this target in most subsamples. The target was based on consultation with international collaborators, many of whom did not have access to large participant pools or funds for offering incentives. This sample would also provide sufficient power (.89–.95; G*Power; Faul et al., 2007) to detect in each country the most well-established effects of nostalgia (vs. ordinary control) condition on social connectedness ($d = 0.72$), meaning ($d = 0.77$), and self-continuity ($d = 0.81$; Ismail et al., 2020). A sensitivity analysis (G*Power; Faul et al., 2007) indicated that the obtained overall sample yielded .80 statistical power to detect a very small effect in a 2 (condition) × 29 (country) analysis of variance (ANOVA; $f = 0.095$, $f^2 = 0.009$, $\alpha = .05$). Participants were invited via classes or university research participation systems and took part in class, in a laboratory, or via the internet between 2014 and 2018. Some students were volunteers, some received course credit, and others received a small monetary compensation. The study was reviewed and approved by the University of Surrey Ethics Committee; coauthors at recruiting institutions also obtained relevant local approvals before collecting data. Participants received written instructions and completed materials on paper or computer. We presented all materials in the same format and in the order below regardless of the medium.[3]

Materials and Procedure

Translation

Each sample completed measures in their native language, or in English if their studies took place in English (e.g., India, Singapore, United Arab Emirates). Where relevant, materials were translated and back-translated by bilingual speakers or professional translators (Brislin, 1980). The only exceptions were (a) Germany, where three fluent speakers each translated materials and the researcher integrated these into a final version and (b) Romania, where a bilingual speaker and certified translator with a Bachelor's

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[2] An additional 40 participants, distributed across 12 countries, began the study but were excluded from analyses for pre-determined reasons, that is, because they completed less than 50% of the materials ($n = 30$) or indicated a different nationality from the country in which they participated ($n = 10$). Participants with less than 50% missing data were included in analyses for those variables they completed.

[3] Participants completed the experimental manipulation before the dispositional prevalence and triggers measures, to avoid priming nostalgia (especially for participants in the ordinary condition) and thereby biasing their memories or state measures. We tested if prevalence or triggers differed by condition (see the online supplemental materials for details). Participants in the nostalgia (vs. ordinary) condition scored slightly higher on the BNI ($d = 0.17$) but not the SNS ($d = 0.06$), and slightly higher on social triggers ($d = 0.12$) but not threat or sensory triggers (respective ds = 0.04, 0.03). Given that participants were randomly allocated equally to conditions in each sample, these small spurious effects are independent of the primary effects and do not impact their interpretation.

Table 1
Participant and Main Method Characteristics

Country	N	Gender (%)			Age			Language	Format	Setting
		Female	Male	Unspecified[a]	Range	M	SD			
Australia	81	70.4	28.4	1.2	16–41	18.89	3.83	English	Paper-pencil	Lab
Belgium	97	52.6	47.4	0.0	18–38	21.26	2.72	French	Paper-pencil	Lab
Brazil	85	55.3	44.7	0.0	18–66	29.46	11.82	Brazilian Portuguese	Paper-pencil	Lab
Cameroon	134	34.3	58.2	7.5	18–45	23.47	4.72	French	Paper-pencil	Lab
Chile	72	66.7	26.4	6.9	18–28	20.43	2.08	Spanish	Computer	Online
China	80	71.3	28.7	0.0	17–35	22.24	3.44	Chinese	Paper-pencil	Lab
Denmark	87	67.8	32.2	0.0	18–48	23.21	5.48	Danish	Computer	Lab
Ethiopia	85	20.0	65.9	14.1	18–34	23.02	3.89	English	Paper-pencil	Lab
Finland	103	85.4	14.6	0.0	19–59	25.07	5.83	Finnish	Computer	Online
Germany	84	42.9	54.8	2.4	16–38	22.28	3.89	German	Computer	Lab
Greece	90	61.1	37.8	1.1	18–51	21.39	5.38	Greek	Paper-pencil	Lab
Hong Kong	123	66.7	32.5	0.8	17–33	20.02	1.82	Chinese	Paper-pencil	Lab
India	93	78.5	21.5	0.0	21–36	24.05	2.75	English	Paper-pencil	Lab
Israel	80	77.5	22.5	0.0	18–32	22.44	2.56	Hebrew	Computer	Lab
Italy	99	48.5	51.5	0.0	19–31	22.85	2.27	Italian	Paper-pencil	Lab
Japan	73	46.6	53.4	0.0	19–64	20.81	5.34	Japanese	Paper-pencil	Lab
Netherlands	89	83.1	16.9	0.0	18–57	25.40	8.07	Dutch	Computer	Online
Poland	93	58.1	41.9	0.0	20–58	32.64	8.50	Polish	Computer	Online
Portugal	104	86.5	13.5	0.0	18–48	22.24	5.33	Portuguese	Computer	Online
Romania	79	58.2	41.8	0.0	19–48	33.76	8.21	Romanian	Paper-pencil	Lab
Russia	85	84.7	15.3	0.0	18–25	19.68	1.30	Russian	Paper-pencil	Lab
Singapore	100	73.0	27.0	0.0	18–27	20.89	1.54	English	Paper-pencil	Lab
Spain	78	83.3	15.4	1.3	20–30	21.87	1.56	Castilian Spanish	Computer	Online
Tunisia	75	81.3	18.7	0.0	18–46	21.53	4.31	French and Arabic	Paper-pencil	Lab
Turkey	82	78.0	19.5	2.4	18–49	22.06	3.69	Turkish	Computer	Online
United Arab Emirates	86	69.8	27.9	2.3	17–23	19.63	1.39	English	Paper-pencil	Lab
United Kingdom	100	83.0	16.0	1.0	18–24	19.26	1.24	English	Computer	Lab
United States of America	92	57.6	41.3	1.1	18–49	20.44	4.05	English	Computer	Lab
Uzbekistan	77	53.2	44.2	2.6	18–25	20.50	1.78	Uzbek	Paper-pencil	Lab

Note. Age data are based on participants without missing responses.
[a] Participants who did not select either female or male may include nonbinary participants.

degree in English translated materials independently. We did not encounter any problems with understanding materials.

Event Reflection Task

We randomly assigned participants to the nostalgia or control condition. Participants in the nostalgia condition received a brief definition of nostalgia ("sentimental longing for one's past, or feeling sentimental for a fond and valued memory from one's personal past")[4] and were asked to "think of a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic." Participants in the control condition thought of an "ordinary event in your life." All participants then wrote down four keywords relevant to their event. On the following page, they spent a few minutes writing about the event and how it made them feel. This manipulation has been extensively used and validated (Hepper et al., 2012; Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015; Wildschut et al., 2006).

State Affect

Participants rated their current affect on five positive (e.g., "I feel… happy," "enthusiastic," "calm") and five negative (e.g., "I feel … sad," "anxious," "bored") adjectives (1 = *not at all*, 6 = *extremely*; $\alpha_{\text{positive affect}} = .76$, $\alpha_{\text{negative affect}} = .73$).[5] We also calculated an ambivalence score by taking the minimum value of a participant's ratings on the items "happy" and "sad" (e.g., if *happy* = 4 and *sad* = 3, then *ambivalence* = 3; Larsen et al., 2017; Leunissen et al., 2021).

Simultaneous happiness and sadness is the most prototypical type of ambivalent affect (Russell, 2017). The minimum-score approach provides an index of simultaneous coactivation and is the most sensitive index of ambivalence (Larsen et al., 2017). Ambivalence scores were positively skewed, and so we log-transformed them for analysis.

Nostalgia Functions

Participants rated 24 items reflecting established state functions of nostalgia (1 = *strongly disagree*, 6 = *strongly agree*). The original Nostalgia Functions Scale (Hepper et al., 2012) contains four items each assessing social connectedness (e.g., "I feel… connected to loved ones"; $\alpha = .86$), meaning (e.g., "…life has a purpose"; $\alpha = .88$), and self-esteem (e.g., "…I like myself better"; $\alpha = .89$). We included more recently developed four-item subscales assessing optimism (e.g., "…optimistic about the future"; $\alpha = .87$; Cheung et al.,

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[4] In most countries, a variant of the word "nostalgia" is in common usage and so this definition was sufficient. In three countries, we added information to the definition to ensure clarity to participants. Specifically, in Portugal we included the word "saudade," in Germany the word "Sehnsucht," and in Ethiopia the word "Tizita." These language-specific terms refer to a form of sentimental longing that is not specific to the past; the definition of nostalgia provided made the past target clear.

[5] We additionally included the items "regretful" and "homesick" for an unrelated project, as well as eight items assessing levels of self-certainty and perceived importance of money for exploratory purposes. We did not analyze the relevant data.

2013), inspiration (e.g., "…filled with inspiration"; α = .92; Stephan et al., 2015), and self-continuity (e.g., "…connected with my past"; α = .72; Sedikides et al., 2016).

State Satisfaction With Life

The Satisfaction with Life scale (Diener et al., 1985) contains five items (e.g., "In most ways, my life is close to my ideal"). We converted this scale to state format by adding the stem "Now, I feel that…" (1 = *strongly disagree*, 6 = *strongly agree*; α = .85).

State Nostalgia

Participants completed the three-item State Nostalgia Scale (e.g., "Right now, I am feeling quite nostalgic"; 1 = *strongly disagree*, 6 = *strongly agree*; α = .95), which has been used extensively as a manipulation check for nostalgia inductions (Abeyta, Routledge, & Juhl, 2015; Hepper et al., 2012; Wildschut et al., 2006). We placed it at the end of the experimental materials to avoid demand characteristics or priming effects that might influence responses to the dependent measures.

Dispositional Nostalgia

We assessed dispositional nostalgia with the two most commonly used scales (Wildschut & Sedikides, 2022b), the SNS and the BNI, preceded with the aforementioned definition of nostalgia. The scales differed somewhat in their orientation, assuring a more comprehensive assessment of the construct. The SNS (F. S. Barrett et al., 2010; Routledge et al., 2008; Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015) contains seven items. Six inquire about the extent to which one values nostalgia (e.g., "How valuable is nostalgia for you?"; 1 = *not at all*, 7 = *very much*) and experiences it frequently ("How often do you experience nostalgia?"; 1 = *very rarely*, 7 = *very frequently*). The final item asks participants to indicate specifically how often they bring to mind nostalgic experiences (1 = *at least once a day*, 8 = *less than once a year*).[6] We recoded the final item and computed a mean nostalgia score (*M* = 4.63, *SD* = 1.26). Although the SNS includes items referring to value and frequency, all seven items load onto a single factor (Biskas et al., 2022; Evans et al., 2022; for more information on validation see Wildschut & Sedikides, 2022b). In the present sample, the SNS was reliable overall (α = .90) and in every country (αs ranged from .75 to .94).

The BNI (Batcho, 1998) requests participants to rate how nostalgic they feel about 20 persons, situations, or events (e.g., "my family," "the way people were," "vacations I went on"; 1 = *not at all nostalgic*, 5 = *very nostalgic*; *M* = 3.13, *SD* = 0.71). Again, the scale was reliable overall (α = .87) and in every country (αs ranged from .76 to .92). The two nostalgia scales correlated moderately at the individual level, *r*(2600) = .54, *p* < .001. Assessments of nostalgia with the two scales have also produced moderate positive correlations in China (Zhou et al., 2008), the United Kingdom (Stephan et al., 2014), and the United States (Routledge et al., 2008).

Triggers of Nostalgia

Participants were presented with a list of 17 events, situations, and feelings that have been identified in prior research or discussed in the literature as triggers of nostalgia (e.g., "When I am feeling lonely"; "When my life is changing a lot"; "When I am talking with old friends"; and "At festivals or feasts"). For each one, participants

rated how often they feel nostalgic (if ever) when in that situation (1 = *never/almost never*, 6 = *always/almost always*). To examine the factor structure of this scale while accounting for the nesting of participants within countries, we group-mean centered the 17 items within country and conducted an exploratory factor analysis (principal axis factoring with oblique rotation) on the group-centered items. The analysis indicated the presence of three factors: psychological threat (nine items: sad, lonely, bored, meaningless, cold, life changes, fear of future, fear of death, discontinuity; α = .85), social gatherings (four items: community events, religious rituals, festivals, family gatherings; α = .77), and sensory triggers (four items: photos/keepsakes, music, seeing friends, scent; α = .77). The three triggers scales correlated moderately at the individual level, *rs*(2589) ranging from .30 to .46, *ps* < .001. Participants were also given space to add up to three other situations that make them feel nostalgia. These additional triggers were translated into English by a bilingual researcher.

Finally, participants reported demographic information by completing open-text boxes for age and ethnic background and indicating gender as "male" or "female." Given that the materials did not offer inclusive gender options, participants who identified as a different gender could leave this question blank or add a note. As a mood repair exercise, they identified the object in their life for which they are most grateful, before being debriefed.

Country-Level Information

We obtained country-level information from a range of external sources.

Individualism (vs. Collectivism)

We extracted this variable from Hofstede et al.'s (1990/2010) list of individualism index scores, which were based on questionnaires completed by 88,000 IBM employees in 74 countries in the 1970s, and remain the most comprehensive published data on cultural values. Scores range from 0 (*most collectivistic*) to 100 (*most individualistic*). Tunisia was not included in Hofstede's list, but has been considered to score similarly to other Arab countries (Basabe & Ros, 2005). Uzbekistan was also not included in the list, but more recent work indicates that it is a collectivistic country (Ernazarov, 2012; Safarov, 2011).

Wealth

We operationalized wealth as gross domestic product per capita, on a person power parity basis in U.S. dollars, obtained from the Central Intelligence Agency's World Factbook. We consulted the 2015 data for samples collected in 2014/2015; for samples collected in subsequent years, we used the respective year's database.

Life Expectancy

We obtained life expectancy at birth from the World Factbook (https://www.cia.gov/the-world-factbook/).

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[6] The final SNS item typically offers seven response options ranging from "at least once a day" to "once or twice a year" (reverse scored). To allow for the possibility that some countries might be low on nostalgia proneness, we added an eighth option "less than once a year." We reverse-coded and rescaled this item to fit into a 1–7 scale (e.g., 1 = 7, 2 = 6.142 … 7 = 1.857, 8 = 1) before computing the overall SNS score.

Life Satisfaction

We obtained this variable from the Happy Planet Index (2016). It uses responses from the World Gallup Poll in which participants in 119 countries rated their present life on a ladder scale from 0 (*worst possible*) to 10 (*best possible*). The three indices of development (i.e., wealth, life expectancy, life satisfaction) correlated positively, but not redundantly, at a country level, $rs(28) = .636–.711$, $ps < .001$.

Average Temperature

We obtained average temperatures, in degrees Celsius, from the World Climate Index (2007), which reports a 30-year average based on World Meteorological Organization data. We extracted data for the major weather station closest to each site of data collection. A handful of countries were unavailable from this source; as such, we obtained average temperatures for them from the World Weather website, which reports data supplied by National Meteorological and Hydrological Services in each country (https://worldweather.wmo.int/en/).

Transparency and Openness

We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study. All data, analysis code, and materials are available at https://osf.io/dr42p/?view_only=4d91cf4e8b1049349797c25e11e0060d. We follow JARS (Kazak, 2018). Further, we analyzed data using IBM SPSS Statistics (Version 27). This study's design and analysis were not preregistered.

Results

Analytic Strategy

All variables were normally distributed unless specified below, contained <1.6% missing data, and had fewer than two outliers ($Z > |3.29|$). We implemented the following strategy for each objective (i.e., prevalence, triggers, functions). First, we used ANOVAs as a preliminary test of whether the countries differed on each dependent variable, and (for experimental variables) whether country interacted with condition (nostalgia vs. ordinary). These preliminary analyses served to answer the basic question of whether nostalgia or its effects vary across cultures, paving the way for subsequent tests to locate the source and nature of any differences.

Our primary analyses tested the effects of country-level predictors (i.e., individualism/collectivism, wealth, life expectancy, life satisfaction, temperature) on nostalgia prevalence (SNS and BNI), triggers, and functions. We used multilevel analysis in SPSS with maximum likelihood estimation, given that individuals were nested within countries. We entered individual-level predictors (e.g., condition) at Level 1. We standardized and entered country-level predictors (e.g., individualism) at Level 2 and tested their main effects and interactions with conditions. We allowed each Level 2 intercept and slope to vary randomly across countries, except in a few cases in which we removed a random slope because it prevented a model from converging.

We estimated effect sizes by (a) computing the intraclass correlation (ICC) for each dependent variable to indicate the proportion of variance at the individual and country level and (b) calculating the approximate R^2 for each full model. Following LaHuis et al.'s (2014) recommendation, we used Snijder and Bosker's (2012) method for calculating total multilevel R^2 (Equation 1):

$$R^2(S\&B) = 1 - \frac{(\sigma^2_{full} + \tau_{00full})}{(\sigma^2_{null} + \tau_{00null})}.$$

This method relies on a full model that excludes random slopes, which does not alter the fixed effects (Snijders & Bosker, 2012). Note that, if the ICC is small, the total R^2 that can be explained by Level 2 predictors is necessarily also small.[7]

As a final exploratory step, we conducted cluster analyses using Ward's method in an attempt to identify if countries grouped together in their nostalgia tendencies in ways that were not accounted for by the measured Level 2 variables. This approach asked whether there are groups of countries with similar nostalgia profiles and what their commonalities are. Most of the cluster analyses did not identify clearly interpretable groupings and so with one exception (i.e., state affect) we report these only in the online supplemental materials.

Prevalence of Nostalgia

Across the full sample, on the final item of the SNS, the median frequency of nostalgia was "approximately twice per week." Overall, 68% of participants reported experiencing nostalgia once a week or more often. Across countries (Table S1 in the online supplemental materials), the median was the same as the overall median in 18 countries, more frequent in two countries (i.e., Portugal, Turkey), and less frequent in eight countries. Thus, consistent with H1a, nostalgia was frequent on average across cultures, but showed country-level variation.

Univariate ANOVAs testing the effect of country were significant for both the SNS, $F(1, 28) = 8.02$, $p < .001$, $\Delta\eta^2 = .08$, and the BNI, $F(1, 28) = 12.31$, $p < .001$, $\Delta\eta^2 = .12$. Moreover, unconditional multilevel models showed that 6.62% of the variance in SNS nostalgia, and 10.50% of the variance in BNI nostalgia, was at the country level. Thus, most variation in nostalgia reflects individual differences, but country plays a substantial role. Figure 1 displays each country's mean SNS and BNI graphically; for full statistics see Table S1 in the online supplemental materials. Overall, mean SNS and BNI levels were in similar ranges to those found in prior research (SNS means typically ranging from 4.25 to 4.88; Hepper et al., 2021; Kelley et al., 2022; Layous et al., 2022; Luo et al., 2016; Seehusen et al., 2013; BNI means typically ranging from 3.1 to 3.3; Batcho, 1995, 1998; Hepper et al., 2021). Countries with notably higher scores than prior means on both nostalgia measures include Finland, India, Portugal, Singapore, Turkey, and the United States. Countries with notably lower scores on both measures include Cameroon, Italy, and Russia. Batcho (1998) defined "high" and "low" nostalgia based on the top and bottom quartiles of BNI in her sample (3.4 and 2.5, respectively). On this measure, four countries qualify as "high nostalgia" (India, Turkey, Brazil, United States) and none qualify as "low."

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[7] We did not conduct measurement invariance tests across country samples. Such tests are most appropriate when comparing multiple cultures to a reference sample, which was not our intention. Moreover, recent authors argue, based on theory and simulation evidence, that measurement invariance tests are over-strict, typically inconclusive, and have less consequence than previously assumed (Gardiner et al., 2019; Robitzsch & Lüdtke, 2020; Welzel et al., 2023). We note that, if the samples did not show scalar invariance, this additional random error variance would work against our hypotheses, making our tests relatively conservative.

Figure 1

Mean Nostalgia Levels by Country
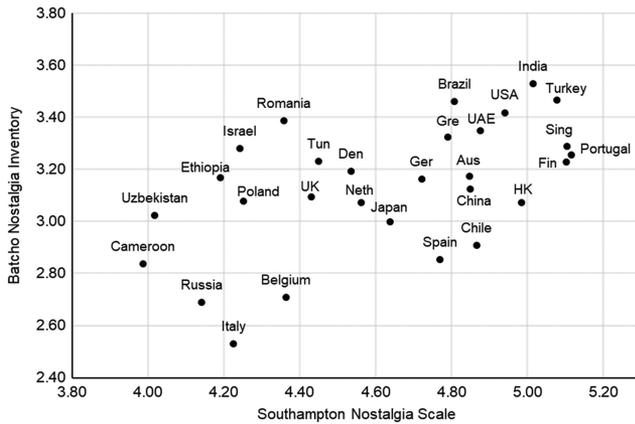
Note. Some country names are abbreviated for ease of reading given space constraints. Aus = Australia, Den = Denmark, Fin = Finland, Ger = Germany, Gre = Greece, HK = Hong Kong, Neth = The Netherlands, Sing = Singapore, Tun = Tunisia, UAE = United Arab Emirates, UK = United Kingdom, USA = United States of America

To understand the cross-cultural variation better, we conducted a series of multilevel models predicting each nostalgia index from country-level predictors (each entered at Level 2 in a separate model).[8] As shown in Table 2, and contrary to H1b, SNS nostalgia was relatively higher in countries with greater wealth and life expectancy, each explaining 1.4% of the total variance in nostalgia (approximately 21.2% of the country-level variance). The remaining country-level predictors were not significant, and none reached significance for BNI nostalgia.

Triggers of Nostalgia

Overall, participants indicated that nostalgia was most often triggered by sensory stimuli ($M = 4.49$, $SD = 1.15$), followed by psychological threats ($M = 3.53$, $SD = 1.09$), and least often by social

Table 2

Trait Nostalgia: Multilevel Analyses Testing Effect of Country-Level Variables

Criterion	SNS				BNI			
Country-level predictor	F	B	p	R^2	F	B	p	R^2
Individualism	0.33	−0.04	.570	.000	0.42	−0.03	.523	.008
Wealth	**6.58**	**0.15**	**.016***	**.014**	0.03	0.01	.863	.000
Life-expectancy	**6.51**	**0.16**	**.017***	**.014**	0.00	−0.00	.980	.000
Life satisfaction	1.59	0.08	.217	.004	0.01	0.01	.907	.000
Temperature	2.04	0.01	.164	.005	2.82	0.01	.104	.010
ICC		.066				.105		

Note. Significant effects are highlighted in bold. Predictors were standardized before analysis and entered in separate models. Criterion variables were retained in their raw scales. SNS = Southampton Nostalgia Scale; BNI = Batcho Nostalgia Inventory; ICC = intraclass correlation; % variance explained by country in unconditional model. R^2 = approximate % in total variance explained by the predictor (Snijder & Boskers, 2012).
* $p < .05$. ** $p < .01$. *** $p < .001$.

gatherings ($M = 2.84$, $SD = 1.23$). However, these ratings varied by country. The three triggers had between 8% and 16% of the variance at the country-level, warranting examination of country-level predictors. The effects of individualism/collectivism (H2) were not significant (Table 3). Psychological Threat was predicted only by temperature: Participants in warmer countries were more likely to endorse these triggers. Social gatherings and sensory stimuli were predicted by indices of development (i.e., wealth, life expectancy, life satisfaction). Participants in more developed countries were more likely to endorse sensory triggers and less likely to endorse social triggers. Again, effect sizes for these predictors were relatively small (explaining up to 4.8% of the total variance, which approximates 14%–48% of the country-level variance). Tendencies, then, to experience nostalgia triggered by certain affective or external stimuli once again largely reflect individual differences, but the country-level variation that exists partly reflects differing quality of life or climates.

Finally, we inspected the additional open-ended triggers that participants listed. In all, 1,385 (53.1%) of participants provided at least one, generating a total of 3,300. These triggers were translated into English and coded (Krippendorf's $\alpha = .949$ from double-coding 10%). After excluding responses that did not contain a valid trigger (7.18%), most responses either reflected the 17 triggers we had listed (20.58%) or fit in one of the three broader factors (44.21%) (Table S4 in the online supplemental materials). The coding identified 924 (28.00%) valid novel responses. Two independent coders grouped these triggers and resolved discrepancies via discussion. A final 27 new trigger categories were identified that were not represented in the original measure (e.g., physical activity, while in bed, while traveling, weather, and seasons; see Table S4 in the online supplemental materials for the full list, examples, and frequencies). With the caveat that these new triggers were generated by a maximum of 3.5% of the total sample, they could point to new ways of prompting and studying nostalgia that are not biased to Western samples.

Psychological Functions of Nostalgia: Experimental Induction

Manipulation Check: State Nostalgia

Due to a technical error, all participants in the Brazil sample completed the nostalgia condition, and so we excluded them from analyses, leaving 28 country samples. As shown in Table 4, multilevel analysis indicated that the manipulation check was successful: State nostalgia was higher in the nostalgia (vs. ordinary) condition. On average, the difference was approximately one scale point and condition explained 12% of the total variance. An ancillary 2 (condition) × 28 (country) ANOVA showed a significant condition effect overall and in 24 out of 28 countries (see Table S5 in the online supplemental materials for ANOVA results and condition effect

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[8] We first conducted exploratory analyses of gender and age (see Summary of Gender and Age Analyses in the online supplemental materials). Both nostalgia indices were higher in younger than older (mid-adulthood) participants, consistent with Hepper et al. (2021). Women reported higher nostalgia than men on the SNS but not the BNI, and there were no significant interactions between gender and age nor any curvilinear patterns. For simplicity, and given the lack of hypotheses, we excluded gender and age from the subsequent main country-level analyses.

Table 3
Triggers of Nostalgia: Multilevel Analyses Testing Effects of Country-Level Variables

Trigger	Psychological threat				Social gatherings				Sensory stimuli			
Country-level predictor	F	B	p	R^2	F	B	p	R^2	F	B	p	R^2
Individualism	2.52	−0.11	.123	.011	3.51	−0.17	.072	.022	0.04	0.01	.852	.008
Wealth	0.99	0.07	.327	.004	**9.48**	**−0.25**	**.005****	**.040**	**4.84**	**0.14**	**.036***	**.015**
Life-expectancy	0.69	0.06	.413	.002	**7.65**	**−0.25**	**.010***	**.034**	**8.96**	**0.19**	**.006****	**.023**
Life satisfaction	0.37	−0.04	.547	.001	**6.26**	**−0.21**	**.018***	**.029**	**4.31**	**0.13**	**.047***	**.013**
Temperature	**22.57**	**0.04**	**<.001*****	**.048**	1.35	0.02	.256	.007	0.63	0.01	.434	.002
ICC	.101				.155				.087			

Note. Significant effects are highlighted in bold. Predictors were standardized before analysis and entered separately. Criterion variables were retained in their raw scales. ICC = intraclass correlation; % variance explained by country in unconditional model. R^2 = approximate % in total variance explained by the predictor (Snijder & Boskers, 2012).
* $p < .05$.   ** $p < .01$.   *** $p < .001$.

sizes in each country for all dependent variables; mean effect sizes are shown in Table 4. In three of the four remaining countries (i.e., Ethiopia, India, Tunisia), state nostalgia was directionally higher in the nostalgia (vs. ordinary) condition. In the final country (i.e., Romania), state nostalgia was high in both conditions ($M_{\text{nostalgia}} = 4.44$, $SD_{\text{nostalgia}} = 0.91$; $M_{\text{ordinary}} = 4.57$, $SD_{\text{ordinary}} = 0.90$; Romania reported higher state nostalgia in the ordinary condition than any other sample). The Country main effects and Condition × Country interaction effects were also significant.

Preliminary Analyses of Dependent Measures

We conducted preliminary multilevel analyses that tested the condition effect alone for each dependent measure (Table 4). On average across cultures, nostalgia (vs. ordinary) yielded significantly higher social connectedness, meaning, self-continuity, optimism, inspiration, and life satisfaction with small or small-medium effect sizes. Surprisingly, the conditions did not differ significantly on overall positive or negative affect, or on self-esteem. However, nostalgia

(vs. ordinary) prompted greater ambivalent affect. All dependent variables contained sufficient variance at the country level (i.e., ICC = 5%–18%) to examine country-level predictors. Although the condition random slope was only significant for two variables, country-level predictors might nevertheless moderate the *fixed* effect of condition. Moreover, ancillary 2 (condition) × 28 (country) ANOVAs indicated significant Condition × Country interactions for several variables (i.e., positive affect, negative affect, ambivalence, social connectedness, meaning, self-esteem; see Table S5 in the online supplemental materials for condition effect sizes in each country and ANOVA results). Accordingly, and to test our substantive hypotheses, we proceeded with multilevel analyses that tested the moderating role of country-level characteristics on the condition effect.

Positive, Negative, and Ambivalent Affect

The average effect of nostalgia was not significant for positive or negative affect individually, but was significant for ambivalence,

Table 4
State Nostalgia and Psychological Functions by Condition (Multilevel Analyses)

Dependent variable	Nostalgia	Ordinary	Condition effect					Condition
	M (SE)	M (SE)	F	Random slope	R^2	ICC		Mean d
State nostalgia	4.56 (0.08)	3.51 (0.08)	124.25***	0.082*	.123	.038		0.764
Affect								
Positive affect	3.62 (0.08)	3.67 (0.08)	0.66	0.023	.004	.093		−0.038
Negative affect	2.04 (0.05)	2.05 (0.05)	0.06	0.012	.002	.048		−0.020
Ambivalence [a]	2.21 (0.04)	1.71 (0.03)	46.55***	0.002*	.032	.049		0.435
Functions								
Social connectedness	4.34 (0.08)	3.87 (0.08)	33.57***	0.056*	.033	.054		0.352
Meaning	4.76 (0.09)	4.45 (0.09)	24.63***	0.022	.020	.104		0.252
Self-esteem	4.20 (0.09)	4.15 (0.09)	0.76	0.023	.005	.119		0.045
Self-continuity	4.56 (0.06)	4.17 (0.06)	71.85***	0.006	.036	.048		0.378
Optimism	4.33 (0.10)	4.19 (0.10)	8.74**	0.002	.010	.166		0.112
Inspiration	4.11 (0.09)	3.93 (0.09)	11.24***	0.008	.010	.117		0.140
State satisfaction with life	4.02 (0.08)	3.89 (0.08)	7.86**	0.006	.008	.108		0.117

Note. Condition was contrast coded (1 = nostalgia, −1 = ordinary). Means were taken from "estimated marginal means" tables in multilevel analysis output. ICC was taken from unconditional model and indicates the variance accounted for by the country level. Random slope of condition is the estimated variance component and indicates whether the random component of the main effect of condition varies significantly by country. R^2 is the total variance explained by condition compared to an unconditional model, estimated from models that excluded the random slope (Snijder & Boskers, 2012). Mean d is based on the mean of individual d effect sizes per country (reported in Table S5 in the online supplemental materials) and is intended to aid comparison with prior literature. All tests excluded Brazil due to a technical error in data collection. ICC = intraclass correlation.
[a] Ambivalence analyses were conducted with log-transformed variable but raw means are presented for ease of interpretation.
* $p < .05$.   ** $p < .01$.   *** $p < .001$.

providing support for H3b but not H3a. Most countries did not show significant differences between conditions individually, but one (Finland) showed higher positive affect and lower negative affect in the nostalgia (vs. ordinary) condition, whereas six showed higher positive affect in the ordinary condition and three different countries showed higher negative affect in the nostalgia condition (Table S5 in the online supplemental materials). Most ($n = 18$) countries showed significantly higher ambivalence in the nostalgia (vs. ordinary) condition and these effect sizes were medium or large.

We report in Table 5 multilevel analyses by condition with country-level predictors. On average, negative affect was higher in cultures that were more collectivistic, warmer, and had lower life-expectancy and life satisfaction. No country-level predictors moderated the condition effect on positive or negative affect. However, four variables moderated the condition effect on ambivalence. We inspected the simple slopes at $M \pm 1\ SD$ on each country-level variable and for each condition (Aiken & West, 1991).

Individualism/collectivism moderated the condition effect on ambivalence (Figure 2, Panel A). The condition effect was significant for all levels of cultural orientation, but was larger for countries that were relatively individualistic ($B = 0.067$, $p < .001$) than collectivistic ($B = 0.039$, $p < .001$). The simple effects of cultural orientation were not significant, but in opposing directions: ambivalence was descriptively higher in collectivistic (vs. individualistic) cultures when recalling ordinary memories ($B = -0.011$, $p = .356$), but descriptively higher in individualistic (vs. collectivistic) cultures when recalling nostalgic memories ($B = 0.017$, $p = .163$).

Wealth, life expectancy, and life satisfaction (our three indices of development) also moderated the condition effect on ambivalence (Figure 2, Panels B–D). The three patterns were very similar. The condition effect was consistently significant, but was larger for highly developed countries ($B_{high\ GDP} = 0.070$, $p < .001$; $B_{high\ life\ exp.} = 0.064$, $p < .001$, $B_{high\ satis.} = 0.068$, $p < .001$) than less-developed countries ($B_{low\ GDP} = 0.029$, $p = .003$; $B_{low\ life\ exp.} = 0.034$, $p = .003$, $B_{low\ satis.} = 0.030$, $p = .002$). Accordingly, the effect of country development was not significant in the ordinary condition ($B_{GDP} = -0.015$, $p = .204$; $B_{life\ exp.} = -0.002$, $p = .899$, $B_{satis.} = -0.014$, $p = .230$), but became (significantly or descriptively) positive in the nostalgia condition ($B_{GDP} = 0.026$, $p = .038$; $B_{life\ exp.} = 0.027$, $p = .037$, $B_{satis.} = 0.024$, $p = .054$). These result patterns indicate that participants in more-developed countries experience greater ambivalence accompanying nostalgic reverie. Nevertheless, nostalgia prompted higher ambivalence compared to the control condition across countries.

Given the lack of moderating effects of our country-level variables on positive or negative affect, we explored whether countries grouped in other ways. We conducted Cluster Analysis on the countries' effect sizes (d) for condition on positive and negative affect. The dendrogram identified three clusters (see the online supplemental materials for full details). The largest, "positive" cluster contained 11 countries (four Northern European countries, four East Asian countries, Ethiopia, Israel, Russia) in which nostalgia increased positive affect and decreased negative affect (respective ds = 0.182, −0.327). Thus, H3a was supported in this group of countries. However, H3b was not supported, as our East-Asian samples showed decreased negative affect. The second, "neutral" cluster contained nine countries (e.g., Australia, Greece, India, United Kingdom, United Arab Emirates) that showed no significant effect of nostalgia on either positive or negative affect (ds = 0.032, 0.077). The third, "negative" cluster contained eight countries (e.g., Chile, Italy, Portugal, Tunisia, United States) in

Table 5
Psychological Functions of Nostalgia: Main and Moderating Effects of Country-Level Variables (Multilevel Analyses)

Dependent variable	Country-level variable main effect (B)					Interaction with condition (B)					R^2				
	Individ.	Temp.	Wealth	Life-exp.	Satis.	Individ.	Temp.	Wealth	Life-exp.	Satis.	Individ.	Temp.	Wealth	Life-exp.	Satis.
Affect															
Positive affect	0.046	−0.023	0.082	0.109	0.101	−0.022	0.010	0.023	−0.006	0.008	.000	.004	.009	.012	.012
Negative affect	−0.117**	0.090*	−0.076	−0.097*	−0.144***	0.006	0.018	−0.030	−0.026	−0.027	.026	.010	.008	.011	.024
Ambivalence	0.003	−0.002	0.006	0.013	0.005	0.014*	−0.004	0.021**	0.015*	0.019**	.059	.046	.052	.051	.051
Functions															
Social connectedness	0.020	−0.089	−0.047	0.011	0.024	0.011	−0.015	0.061	0.031	0.018	.008	.023	.021	.019	.019
Meaning	−0.048	0.040	0.172*	−0.183	−0.120	−0.036	0.031	0.060*	0.011	−0.018	.018	.022	.040	.038	.029
Self-esteem	−0.021	0.027	−0.135	−0.214*	−0.065	−0.021	0.022	0.044	0.023	−0.014	.000	.006	.018	.030	.008
Self-continuity	−0.019	−0.012	−0.009	0.055	0.022	0.029	0.008	0.058**	0.023	0.030	.022	.036	.038	.038	.037
Optimism	−0.017	0.026	−0.193*	−0.276**	−0.092	−0.006	0.026	0.035	−0.000	−0.003	.011	.010	.033	.052	.015
Inspiration	−0.065	0.085	−0.203*	−0.319***	−0.172*	−0.006	0.017	0.049^	0.004	0.018	.005	.014	.033	.058	.026
State satisfaction with life	0.126	−0.052	0.025	0.077	0.157*	−0.042^	0.023	−0.031	−0.042	−0.051*	.020	.011	.010	.014	.030

Note. Significant effects ($p < .05$) are highlighted in bold. Individ. = Individualism (vs. collectivism); Temp. = temperature; Life-exp. = life-expectancy; Satis. = country-level satisfaction with life. Condition was contrast coded (1 = *nostalgia*, −1 = *ordinary*) and country-level predictors were standardized. Main effects of condition were very similar to those reported in Table 4 (i.e., all remained significant or not significant, respectively) so are omitted for brevity. All models included random intercept and slope for condition. R^2 indicates the total variance explained compared to the unconditional model and was estimated from models that excluded Brazil due to a technical error in data collection.
^ $p < .06$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 2

Ambivalence by Condition and Country-Level Variables
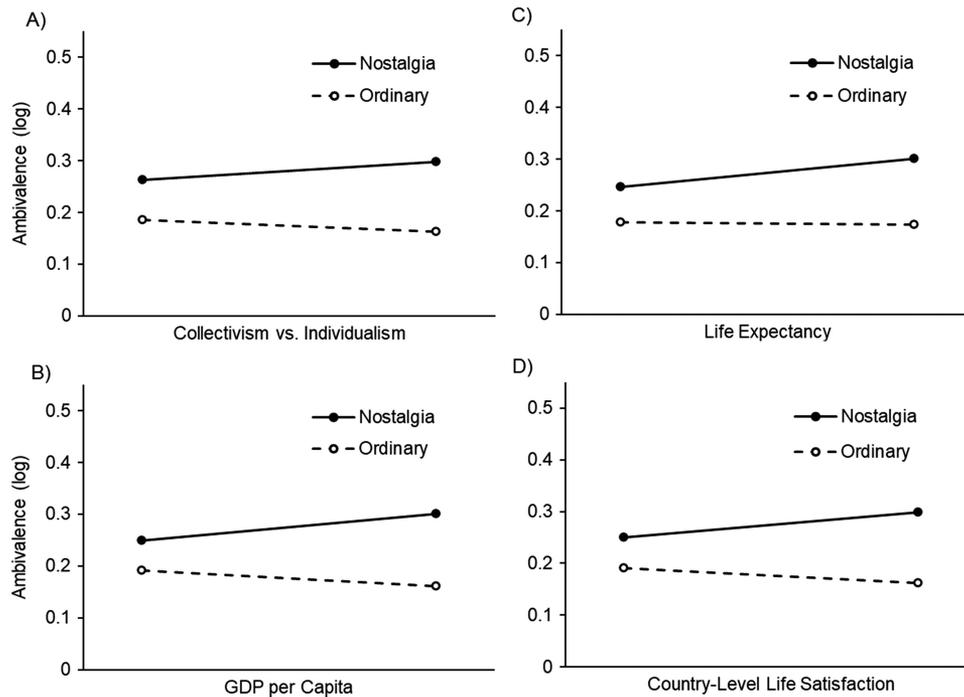
Note. Panels display: (A) Collectivism versus individualism (higher scores indicate higher individualism), (B) wealth, (C) life expectancy, and (D) life satisfaction. All *x*-axes are displayed between *M* − 1 *SD* and *M* + 1 *SD*. The ambivalence *y*-axis is displayed up to the scale midpoint (i.e., log of 3.5).

which nostalgia decreased positive affect and increased negative affect (*d*s = −0.420, 0.295). Overall, the hedonic tone of nostalgic reflection (compared to control) varied across cultures from positive, to neutral, to negative. Nevertheless, effects in all three clusters were small or small-medium, indicating that altered hedonic mood was not a dominant consequence of nostalgia.

Psychological Functions

As per Table 4, participants in the nostalgia condition reported significantly higher levels on five of the six functions as well as satisfaction with life, supporting H4a. These effects also reached significance in a number of individual cultures despite the smaller samples (see Table S5 in the online supplemental materials for effect sizes and significance levels). The largest and most reliable effect of condition was for self-continuity (significant in 14 countries, with no Condition × Country interaction). The condition effects on social connectedness and meaning were significant overall and differed significantly by country, being significant and positive in 11 and nine countries, respectively, with medium or large effects, with negative (nonsignificant) effects in three countries each and the remaining effects positive and nonsignificant. The condition effect on self-esteem was not significant overall, but differed significantly by country and was significantly positive in three countries with medium-sized effects. The effects on optimism, inspiration and satisfaction with life were each significant overall and did not differ significantly by country, but due to their small sizes, they reached significance in just two, three, and three individual countries, respectively.

We next conducted a series of multilevel models in which we added country-level predictors as moderators of the nostalgia effect (Table 5). On average, levels of several functions were lower in countries with higher wealth, life expectancy, and life satisfaction. State satisfaction with life was higher in countries with higher overall life satisfaction (as would be expected). Inconsistent with H4b, individualism/collectivism did not moderate the effect of nostalgia on any outcome variable, whether relatively self-related (e.g., self-esteem) or communal (e.g., social connectedness; Table 5). Temperature and life expectancy also did not moderate the benefits of nostalgia.

Country wealth moderated the nostalgia effects on meaning and self-continuity (Figure 3; the equivalent interaction terms for social connectedness and inspiration were *p*s = .136 and .053, respectively). In both cases, the simple effects of nostalgia were positive and significant for all levels of wealth, but were larger in relatively wealthy countries (*B*$_{meaning}$ = 0.215, *p* < .001; *B*$_{continuity}$ = 0.255, *p* < .001) compared to poorer countries (*B*$_{meaning}$ = 0.095, *p* = .034; *B*$_{continuity}$ = 0.139, *p* < .001). The difference was due to participants in poorer (vs. wealthier) countries reporting higher meaning and descriptively higher self-continuity in the control condition (*B*$_{meaning}$ = −0.232, *p* = .008; *B*$_{continuity}$ = −0.067, *p* = .237); this was not the case in the nostalgia condition (*B*$_{meaning}$ = −0.112, *p* = .163; *B*$_{continuity}$ = 0.050, *p* = .354). Participants in poorer countries may derive meaning and self-continuity from ordinary memories.

Country-level life satisfaction moderated the nostalgia effect on state satisfaction with life (Figure 4). The effect of nostalgia was significant for those in countries with relatively low satisfaction (*B* = 0.118, *p* < .001), but, in countries with high satisfaction, state

Figure 3

Meaning in Life and Self-Continuity by Condition and Country Wealth
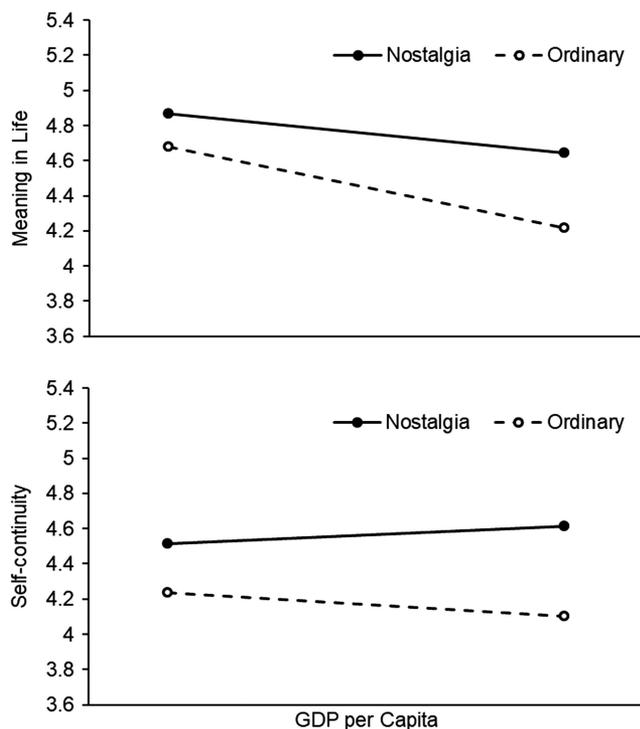
Note. The x-axes are displayed between $M - 1\ SD$ and $M + 1\ SD$.

satisfaction with life was high in both conditions (nostalgia effect: $B = 0.016$, $p = .592$). Accordingly, the effect of country-level satisfaction was significant in the ordinary condition ($B = 0.208$, $p = .005$), but not in the nostalgia condition ($B = 0.106$, $p = .128$). This pattern supports the notion that nostalgia can buffer low hedonic well-being in countries with a lower baseline level of life satisfaction. Overall, H4c was supported for satisfaction with life (i.e., hedonic well-being), but other state functions of nostalgia (i.e., eudaimonic well-being) manifested the reverse pattern.

Figure 4

Satisfaction With Life by Condition and Country-Level Well-Being
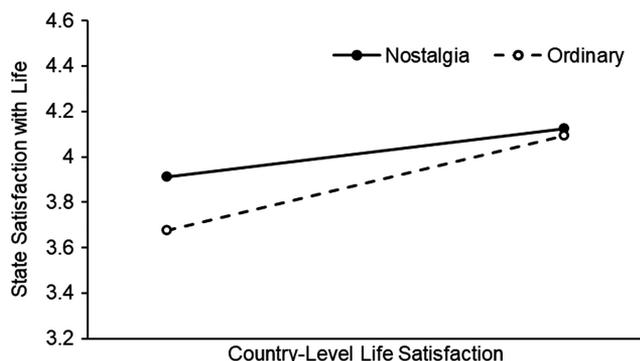
Note. The x-axis is displayed between $M - 1\ SD$ and $M + 1\ SD$.

Exploratory Analysis: Moderation by Trait Nostalgia

Some recent evidence indicates that effects of experimentally induced nostalgia may be stronger among, or limited to, participants high in trait nostalgia (Cheung et al., 2016; Layous et al., 2022). To test this possibility, we conducted ancillary multilevel analyses regressing each dependent measure on condition, trait nostalgia (SNS), and their interaction (see Table S7 in the online supplemental materials for details). All main effects of condition remained significant or not significant as reported earlier. Trait nostalgia was significantly and positively associated with all dependent measures except for satisfaction with life. Out of 11 tested interactions, three were significant: ambivalence, social connectedness, self-continuity. In all three cases, the condition effect was positive and significant at all levels of trait nostalgia, but was larger for participants high (Fs ranged from 34.44 to 55.98, ps < .0005) than low (Fs ranged from 10.83 to 23.30, ps < .002) in trait nostalgia. The remaining eight interactions were null. Participants benefited from experimentally induced nostalgia, even if they were low in trait nostalgia.

Discussion

We examined, for the first time, systematic cultural differences in the prevalence, triggers, and psychological functions of nostalgia in 29 countries or cultural regions. Across dependent variables, cultural region explained only a small portion of variance, indicating that the operation of nostalgia is largely consistent across cultures and is shaped more by individual-level factors. However, we also identified some country-level effects that show novel—and sometimes unexpected—differences between cultures. We revisit our key questions in light of the findings.

Prevalence of Nostalgia

Overall, nostalgia was a common experience across cultures. The two nostalgia scales were internally reliable in each of the 29 samples, supporting the notion that nostalgia is a meaningful concept to participants across cultures. We hypothesized that nostalgia would be experienced at least once per week in most countries (H1a), and indeed the median equaled or exceeded this frequency in all but three samples. Overall, 68% of participants reported experiencing nostalgia once a week or more often. Further, in most countries, the median was twice a week—more frequent than in previous U.K.-based studies (Hepper et al., 2021; Wildschut et al., 2006).

Nostalgia varied somewhat by country. The highest-nostalgia countries include China, Greece, the United Kingdom, and the United States, where much of the extant nostalgia research has been conducted. This may imply that the nostalgia literature better reflects the operation of nostalgia in high-nostalgic cultures, and may not be wholly representative. Such a concern is mitigated by evidence that similar findings have been obtained in Denmark (Sedikides et al., 2018), Japan (Kusumi et al., 2010), and the Netherlands (Hart et al., 2011), which reported moderate nostalgia levels. That said, future research would do well to include samples from a wider range of countries. The least nostalgic countries were Cameroon, Italy, and Russia. These countries nevertheless endorsed the BNI targets between "a little" and "somewhat nostalgic," and the SNS items around the scale midpoint—so are better considered nostalgia-neutral than nostalgia-averse. Future research might explore these cultures in more depth.

Of the country-level variables that we examined, nostalgia varied by wealth and life-expectancy, with nostalgia being higher in relatively more advantaged countries. This did not support the expected pattern (H1b) that country-level threats would foster higher nostalgia, perhaps because nostalgia was moderate or high in most samples. One speculative reason may be relative deprivation (Jetten et al., 2021; Olson, 1963). Most of the data were collected in 2014–2015, during the economic recession. As such, people in wealthier countries may have subjectively experienced a larger fall than those in less wealthy countries, reverting in part to nostalgia. Alternatively, this finding could reflect the tendency for higher income to engender self-conscious emotions (e.g., pride, contentedness—and perhaps nostalgia), although it does not typically engender social emotions (of which nostalgia is one; Tong et al., 2022). Moreover, future research could examine alternative country-level predictors which might explain more variance.

Given the absence of clear country-level groups or predictors of nostalgia, it is unsurprising that findings indicated far more variation within countries than between countries (i.e., small ICCs). That is, rather than some cultures being consistently nostalgia-prone and others nostalgia-neutral, nostalgia may more accurately reflect person-level individual differences. This pattern aligns with research that has examined nostalgia as a personality trait, which is partly heritable (Luo et al., 2016) and co-occurs with variables such as neuroticism, need to belong, empathy, past-oriented time perspective, counterfactual thinking, and reflection (Cheung et al., 2018; Jiang et al., 2021; Juhl et al., 2020; Newman et al., 2020; Seehusen et al., 2013). It also aligns with research that shows nostalgia to vary according to individuals' recent exposure to psychological threats such as loneliness (Zhou et al., 2008), life changes (Sedikides, Wildschut, Routledge, & Arndt, 2015), and meaninglessness (Routledge et al., 2011) or disillusionment (Maher et al., 2021). Thus, a person's frequency of, and attitude toward, nostalgia is not determined primarily by the sociocultural context, but rather shaped by their personality and life experiences. Future research could examine personality variation in nostalgia systematically across cultures.

Triggers of Nostalgia

We asked participants to report how often they experienced nostalgia in the context of a range of triggers drawn from prior research and the wider literature. Across countries, these triggers grouped coherently into factors reflecting psychological threats (e.g., loneliness, meaninglessness, discontinuity), social gatherings (e.g., community events, family gatherings), and sensory stimuli (e.g., music, scent). Participants endorsed the sensory triggers as most often evoking nostalgia overall. Again, results revealed modest country-level variation, in the context of greater interindividual variation.

Contrary to expectations (H2), individualism/collectivism did not influence the triggers of nostalgia systematically. Instead, indices of higher development (wealth, life expectancy, and life satisfaction) were associated with endorsing sensory triggers more and social triggers less. One reason might be that participants in more-developed countries tend to derive information and entertainment from media (e.g., internet streaming, smartphones) that are infused with sensory stimuli, whereas those in less-developed countries may have less access to such media and derive information and entertainment more often from conversations and gatherings. If so, this pattern is likely to generalize to other emotions (e.g., joy, pride, hope).

Unexpectedly, participants in warmer countries endorsed psychological threat triggers of nostalgia more than those in colder countries. Perhaps people in warmer countries experience more psychological threat, a notion consistent with reports of higher aggression in warmer than colder climates (Allen et al., 2018). Or perhaps people in warmer countries report more threat due, in part, to their lower subjective well-being (Connolly, 2013). Regardless, replication of this finding is warranted.

Participants had the opportunity to add their own triggers. Most of these reflected examples of the triggers we had listed or their broader factors. Overall, participants across cultures recognized nostalgia as being prompted by the same types of trigger—both psychological and external. Given that most prior research has used psychological threat or sensory stimuli (or autobiographical recall) to induce nostalgia, future research ought to examine nostalgia that is triggered by social stimuli, such as festivals or conversations. Further studies could also examine nostalgia in the novel contexts generated by participants, such as while engaged in physical activity, traveling, or surrounded by nature.

Psychological Experience and Functions of Nostalgia

In the experimental component of our investigation, we implemented the Event Reflection Task (Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015) to examine the short-term psychological impact of induced nostalgia (vs. control condition) across cultures. Crucially, the manipulation was successful. The Event Reflection Task significantly induced state nostalgia overall, and in 24 of the 28 countries that completed the experiment. These included 17 geographically and culturally diverse countries in which the Event Reflection Task had not been used before to our knowledge (e.g., Belgium, Cameroon, Chile, Israel, Singapore). In four countries (Ethiopia, India, Romania, and Tunisia), the Event Reflection Task did not significantly increase state nostalgia. This could partly reflect the positioning of the manipulation check at the very end of the experimental materials, by which time effects could have weakened; for these four countries with the smallest effects in the population, such weakening may have prevented the effect from being statistically significant. Future research could explore whether music or conversation might act as a more effective nostalgia induction in these countries, given their strong endorsement of social triggers. Nevertheless, the Event Reflection Task generally emerged as a valid nostalgia induction method across a wide range of cultures and languages.

Affect

Neither positive nor negative affect differed between conditions, but nostalgia prompted greater ambivalence (coactivation of happiness and sadness). This finding indicates that changes in mood are not the primary consequence of experiencing nostalgia, but the overriding affective tone is bittersweet, consistent with past theorizing and evidence (Hepper et al., 2012; Leunissen, 2023; Leunissen et al., 2021). This finding is also consistent with evidence that, even when nostalgia entails positive affect, this does not account for nostalgia's benefits (Cheung et al., 2013; Evans et al., 2021; Hepper et al., 2021).

Country-level variables did not moderate nostalgia's effect on positive or negative affect. The effect of nostalgia on ambivalence was unexpectedly slightly larger in more-developed countries (i.e.,

those with higher wealth, life expectancy, and life satisfaction). Previous findings indicated that people in East Asian countries conceptualize nostalgia as more prototypically negative than those in other world regions (Hepper et al., 2014). However, here we found no evidence that nostalgia generated more state negative affect or ambivalence in Asian cultures. Instead, participants in these regions reported more negative affect than others under neutral conditions (i.e., after recalling an ordinary event), but then gained positive affect from nostalgia. Similarly, participants in collectivistic countries reported descriptively more ambivalence in the ordinary condition, but less so than those in individualistic countries following nostalgic recall. Moreover, across conditions, negative affect was higher in countries that were warmer, more collectivistic, and had lower life expectancy and life satisfaction. Thus, the tendency of people in collectivistic cultures to engage with and value negative emotions (Grossmann & Ellsworth, 2017) appears to infuse their general recall habits, but not specifically to characterize or be exacerbated by nostalgia.

Psychological Functions

The literature attests to the state benefits of nostalgia in terms of self-, social-, and meaning-related psychological functions (Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015; Sedikides & Wildschut, 2018, 2019). Here, we assessed a range of such functions as indices of eudaimonic well-being, as well as state satisfaction with life as an index of hedonic well-being. The key eudaimonic benefits of nostalgia replicated both overall and individually across most countries. The strongest psychological functions were self-continuity, social connectedness, and meaning. These patterns replicate extensive studies conducted in a handful of mainly Western countries (Abakoumkin et al., 2019; Evans et al., 2021; Hepper et al., 2012; Routledge et al., 2011; Sedikides et al., 2016; Wildschut et al., 2006). Prior nostalgia effects on the self-related functions of optimism (Cheung et al., 2013, 2016) and inspiration (Evans et al., 2021; Stephan et al., 2015) were also replicated overall, but were smaller and did not generalize to all countries. Self-esteem (Evans et al., 2021; Hepper et al., 2012; Wildschut et al., 2006) was the weakest psychological benefit, showing significant boosts only in a subset of countries. The comparative effects of different functions replicate their relative effect sizes in prior research (Ismail et al., 2020). Taken together, all three key pillars of nostalgia functions replicated across cultures, but in the self-related realm, people seem to derive a sense of continuity, more than positivity, from nostalgia. This pattern dovetails with the above-described lack of effect on positive affect in most cultures. We nevertheless observed some hedonic benefit: State satisfaction with life was significantly boosted by nostalgia on average. This adds to a growing literature on nostalgia and hedonic well-being (Hepper & Dennis, 2023; Layous & Kurtz, 2023).

As with the other variables, we found modest country-level variation in the psychological effects of nostalgia. Based on the idea that nostalgia is most powerful when buffering threat (Wildschut & Sedikides, 2023a, 2023b), we had anticipated that psychological effects of nostalgia would be stronger in countries exposed to more threats (e.g., cold weather, limited wealth, or unhappiness). Satisfaction with life was the only variable that manifested this threat-buffering pattern, with participants in countries that were generally less happy gaining more from nostalgia. Future studies might test if nostalgia buffers experimentally induced psychological threats across countries.

Some aspects of eudaimonic well-being (most strongly, meaning and self-continuity) instead evinced stronger effects of nostalgia in wealthier countries: Although participants across cultures benefited from nostalgia, those in poorer countries gained some of these functions from ordinary memories too. This notion draws attention to a feature of the Event Reflection Task that can be considered both a strength and (in this context) a limitation. Asking control participants to recall an ordinary event from their past is intended as a conservative task that shares cognitive and temporal components with the experimental condition and differs only in its emotional (i.e., nostalgic) focus. However, some participants may use the control task as an opportunity to fulfill psychological functions or appreciate the value in ordinary life—by focusing, for example, on the meaningful relationships that surround them or the routines they have maintained despite life challenges. Using alternative manipulations (e.g., more prescriptive ordinary memory task; Wildschut et al., 2006; music; F. S. Barrett et al., 2010) might mitigate this risk in future research that involves diverse samples. The possibility that people in less-advantaged countries can derive eudaimonic well-being from ordinary memories warrants examination in future research.

Implications

The findings provide insights into the cross-cultural relevance of nostalgia. Adding to prior evidence that people conceptualize nostalgia similarly across cultures (Hepper et al., 2014), we can now state with a degree of confidence that across cultures nostalgia is a common experience that is triggered by comparable psychological, sensory, and social stimuli, and that can be induced reliably via autobiographical recall. Across variables, there was more similarity than difference between cultures in the reliability, levels, and operation of nostalgia. These patterns imply that other effects of nostalgia might also generalize across cultures. Future studies could examine whether inducing nostalgia in additional cultures is equally capable of buffering personal psychological threats and of promoting prosocial and motivational outcomes. If so, encouraging nostalgia could provide a personal positive-psychology intervention that is readily accessible to people across cultures (i.e., a prevalent concept and emotion) and is fairly easy to implement (i.e., can be induced using personal memories or music). Recent findings (Layous et al., 2022) show that a 6-week nostalgia intervention can increase well-being in U.S. students, although after 3 months the benefits were limited to participants high in trait nostalgia. The present findings, like Cheung et al. (2016), also indicate a small advantage for participants high on dispositional nostalgia even in short-term manipulations. Further evidence is required to develop interventions that are appropriate for different groups.

Given that nostalgia is understood and effective across cultures, people should also be able to draw on this resource when relocating to new countries. Migrants, immigrants, or sojourners face numerous adjustment and acculturation stressors; nostalgia may help to buffer these stressors and facilitate coping and integration in the new culture (Sedikides et al., 2009; X. Zou et al., 2018). Our findings imply that social contacts in one's host/destination country will understand the value of nostalgia and might facilitate its use—nostalgia might transcend language or cultural barriers. Promisingly, Syrian refugees in Saudi Arabia, especially those high on resilience, reaped several key nostalgia benefits (Wildschut et al., 2019). Further, bicultural individuals who recalled nostalgic memories from their host country

endorsed more positive acculturation and bicultural identity integration (Petkanopoulou et al., 2021; X. Zou & Petkanopoulou, 2023). A broader cultural perspective on nostalgia in more diverse samples will add to this picture.

More broadly, the cross-cultural consistency of nostalgia raises the possibility that nostalgia has evolutionary relevance. Adding to evidence that people across cultures understand the concept of nostalgia in similar ways (Hepper et al., 2014), they also report similar prevalence, triggers, and short-term psychological benefits of nostalgia. Hence, nostalgia appears to be psychologically adaptive and may serve some similar functions as other self-conscious emotions (e.g., Goetz & Keltner, 2007; Tracy et al., 2020). Our findings indicate that across cultures nostalgia consistently promotes both internally focused (e.g., self-continuity, meaning) and socially focused (e.g., social connectedness) functional responses. Hence, nostalgia's unique affective-cognitive signature might allow it to serve both ego-focused and social control functions (Hupka et al., 1999).

There was no evidence that participants used or benefited from nostalgia in ways that reflected their country's individualism or collectivism. Cultural orientation was unrelated to trait nostalgia or triggers. Although participants in more collectivistic countries reported higher negative affect (in both the nostalgia and control condition) and ambivalence (in the control condition), these participants did not differ in any psychological benefits specific to nostalgia. Recent advances suggest that the use of country-level individualism/collectivism may be a somewhat blunt tool for investigating cultural differences in the operation of the self. Vignoles et al. (2016) proposed a seven-factor model of self-construal that characterizes both individual and cultural levels of analysis and goes beyond the traditional two dimensions. Hence, it may be necessary to consider which aspects of individualism/collectivism are relevant to the topic of enquiry and measure them directly.

Limitations and Future Directions

The present investigation moves nostalgia research in a more universal direction, but far from completing the journey. For example, we derived 29 diverse and dispersed samples, but the sampling was partly opportunity-based and did not ensure a systematic cross-section of continents or other country-level variables (e.g., wealth, individualism/collectivism). It is possible that such sampling might have detected stronger effects of country-level variables. As is typical in psychology research, Africa was underrepresented. We continue to urge greater examination of psychological functioning in a range of African cultures. Similarly, we examined country-level variables that were considered theoretically relevant, but follow-up work might explore additional national variables (e.g., political instability, a potentially important index of threat) or group countries that share similar characteristics (e.g., social/economic development). It would also be beneficial to establish more up-to-date norms of countries' individualism/collectivism levels, given that Hofstede's (1990/2010) still-dominant framework relied on data from the 1970s. Future studies might measure each participant's level of interdependence/independence, life satisfaction, and wealth as well as country-level factors. It would also be optimal to measure temperature at the daily local level rather than relying on averages.

A perennial issue in cross-cultural research is the equivalence of measures across cultures and languages. Given that people across many cultures understand nostalgia in very similar ways (Hepper et al., 2014), we may be confident that participants were responding to the same construct. However, cultural differences in interpretation or response habits are plausible. As stated, we did not conduct measurement invariance analyses because of criticisms for being unrealistic, often unnecessary, and overstating differences between cultures (Gardiner et al., 2019; Robitzsch & Lüdtke, 2020; Welzel et al., 2023). We did obtain adequate internal consistency for the nostalgia measures in all samples, attesting to their reliability. Nevertheless, we acknowledge the value of further establishing cross-cultural consistency in responses. Examining the content of nostalgia narratives across cultures would also shed light on whether people recall memories with different phenomenological character or valence, or perceive past memories differently if their culture entails greater threat.

We focused on personal nostalgia, or nostalgia for one's own past memories. Collective (e.g., national) nostalgia may also play similar psychological roles for people depending on their culture (Smeekes et al., 2018, 2023). Different cultures may feature different types of nostalgia (at different times; cf., Holak & Havlena, 1992). For example, Holak et al. (2005) noted that interpersonal nostalgia (felt when hearing others' memories) and cultural nostalgia (from shared or common experiences) may be especially prevalent in Russia due to family generations often cohabiting and cultural changes after the Soviet era (see also Nourkova & Bernstein, 2010). Similar ideas have been proposed by researchers regarding Central and Eastern Europe, as public opinion surveys indicate a sense of nostalgia for the past communist era (J. Ekman & Linde, 2005), and in Germany for "Ostalgie" (Boyer, 2006). In new decades or generations, novel influences arise in a country or subculture that could alter the prevailing winds of nostalgia. For example, threats induced by the COVID-19 pandemic may have increased nostalgia (Huang et al., 2023; Zhou et al., 2022; see Hepper & Dennis, 2023, for a review). Likewise, changes in a country such as political unrest or developmental progress—which may be more influential in relatively poorer countries—could alter the role and functioning of cultural nostalgia over time.

When examining psychological functions, we focused on the short-term benefits of experimentally induced state nostalgia using the Event Reflection Task, which, as discussed, replicated across a large body of extant literature and now across cultures. Research ought to clarify the extent to which these well-being benefits are also facilitated by naturally occurring nostalgia (e.g., long-term correlates of trait nostalgia, short-term effects of nostalgia that are triggered in daily life). Trait nostalgia has shown positive associations with well-being indices while accounting for temporal or age effects. For example, nostalgia was positively associated with perceived social support after controlling for prior loneliness (Zhou et al., 2008) and with optimism for the future in recent university graduates (Biskas et al., 2019). Dispositionally nostalgic individuals also reported higher meaning in life (Routledge et al., 2012), thriving (Kelley et al., 2022), and were more resilient to mortality salience inductions (Juhl et al., 2010; Routledge et al., 2008). Further, psychological well-being increased or sustained with age for participants high in trait nostalgia, but decreased with age for those low in trait nostalgia (Hepper et al., 2021). These findings indicate that being high in nostalgia bolsters resilience to psychological threats and life events, although some evidence questions their generalizability. For example, nostalgia for home in first-year university

students predicted positive beliefs only if students had maintained contact with previous social groups (Iyer & Jetten, 2011). Thus, the reference of one's nostalgic reverie may influence its efficacy. Also, Newman et al. (2020) reported that a trait "nostalgic intensity" measure correlated with more negative variables than the SNS in students, including negative affect, regret, search for meaning, depression, and lower self-esteem. However, given that nostalgia is triggered by negative emotions (Wildschut et al., 2006), existential doubts (Juhl et al., 2010), deficits in sociality (Zhou et al., 2008), and self-esteem threats (Vess et al., 2012), these correlations may reflect the reverse causal direction (see also Hepper & Dennis, 2023). Also, longitudinal findings indicate that nostalgia acts as a response to distress, not vice-versa (Wang, Sedikides, et al., 2023; Wang, Wildschut, et al., 2023).

In terms of nostalgia in daily life, few studies have used experience-sampling methods. Such studies have observed both positive (Evans et al., 2021; Van Dijke et al., 2019; C. Zou et al., 2023) and negative (Newman et al., 2020; Newman & Sachs, 2020) associations between daily nostalgia and well-being indices, or found that both daily nostalgia and distress were predicted by adverse conditions (Van Tilburg et al., 2018). Measurement and design issues render comparison of their findings difficult (e.g., effects may again reflect the reverse causal direction), and more studies that control for temporal effects are needed. Another way of examining everyday nostalgia experimentally is to induce nostalgia in ways that might occur more frequently than the "most nostalgic experience" used in the Event Reflection Task. Indeed, participants who recall a "typical nostalgic event" reported increased happiness and positive affect (Zhou et al., 2022), and participants who recall "a nostalgic event" report higher eudaimonic well-being (Kelley et al., 2022), giving confidence that effects of the Event Reflection Task are not artifacts of the instruction.

Despite the presence of country-level variance and small systematic effects of some country-level variables, most variance in nostalgia functioning was at the interindividual level. This echoes evidence that other personality-related variables are more similar than different across cultures (Allik, 2005; Hanel et al., 2018). Hence, research ought to examine further the individual-level differences that most influence the way nostalgia operates. Research in Western samples has identified personality moderators of nostalgia such as attachment orientation (Abeyta et al., 2015; Wildschut et al., 2010) and narcissism (Bialobrzeska et al., 2023; Hart et al., 2011). Also, individuals who are higher on trait nostalgia (Cheung et al., 2018; Layous et al., 2022), higher on resilience (Wildschut et al., 2019), or lower on habitual negative thinking (Verplanken, 2012) appear to be better equipped to make the most of nostalgia's benefits. Much remains to be understood about why these differences emerge and about other variables (e.g., emotion regulation) that might moderate nostalgia.

Constraints on Generality

The reported findings relate to the target population of well-educated young adults across multiple cultures. Our focus on student samples, albeit deliberate for consistency (Van de Vijver & Leung, 1997), restricts generalization. Past studies that included community members have obtained comparable findings (Hart et al., 2011; Hepper et al., 2012; Sedikides, Wildschut, Routledge, & Arndt, 2015; Zhou, Wildschut, Sedikides, Shi, et al., 2012), suggesting

that our reliance on student samples may not be problematic. However, Hepper et al. (2021) did find that more-educated participants reported lower nostalgia in a U.K. community sample. Moreover, in some of our cultural samples, students would arguably be exposed than other residents to more Westernized influences or socioeconomic development, and so future research ought to examine this issue. Similarly, age may play a role. Again, studies with midlife or older adults have shown that across ages nostalgia is triggered similarly by threat (Stephan et al., 2014; Wildschut & Sedikides, 2020) and has parallel short-term well-being effects (Abeyta & Routledge, 2016; Cheung et al., 2013; Hepper et al., 2012). Nonetheless, prevalence of nostalgia varies by age. For example, in Greece older women were most likely to be high in nostalgia (Madoglou et al., 2017), and in Russia and Uzbekistan, middle-aged and older adults were higher in nostalgia for the USSR than younger adults (Levada Center, 2017). In the United Kingdom, nostalgia peaked in younger (under 30) and older (over 75) age groups (Hepper et al., 2021). Hence, it would be fruitful to examine age effects and the role of nostalgia in older adulthood across cultures.

Despite a large total sample size and adequate statistical power, we also note that the 80–100 participants per country that our resources afforded limits generalizability. The unavoidable variation between samples in terms of laboratory setting, recruitment strategy, and compensation may also have caused unknowable bias in responses, although we did our best to standardize materials.

Concluding Remarks

Our research indicated that nostalgia can be regarded as part of the fabric of everyday psychological functioning across a wide range of cultures. With people across countries experiencing nostalgia on a weekly basis or more, when exposed to both internal (e.g., threats) and external (e.g., music, conversations) triggers, nostalgia surrounds us. In addition, the findings suggest that nostalgia is more than an epiphenomenon—people across cultures who nostalgize gain a sense of self-continuity, meaning in life, and connectedness to close others. Given prior evidence for the well-being and behavioral consequences of these benefits, nostalgia may represent an adaptive pancultural emotion that serves to facilitate individual functioning and knit societies together around the world.

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