CURRENT ISSUES IN NOSTALGIA RESEARCH

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CURRENT ISSUES IN NOSTALGIA RESEARCH

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EDITORIAL
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Editorial: Current Issues in Nostalgia Research

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Editorial on the Research Topic

Current Issues in Nostalgia Research

In the beginning of the overview text to this Research Topic, we defined nostalgia as "a sentimental longing … for the past" (Pearsall, 1998, p. 1,266) and reported the results of a search in Web of Science for the topic "nostalgia" (in September 2019). Based on the sharp growth over the last five decades, we concluded that the field of nostalgia research is growing exponentially, from 114 publication records in the first decade (1970–1979) to 2,852 publications in the most recent decade (2010–2019), which at that time (September 2019) was not yet concluded. A more recent search (May 2021) revealed 488 relevant publications in 2019, a number that grew to 521 in 2020. This burgeoning interest in nostalgia research is also reflected in the contributions to our Research Topic, which resulted in 12 published articles.

In the mentioned overview, we attributed this development of interest in nostalgia mainly to nostalgia's benefits for individuals and groups. Nostalgia has been identified as a resource that both protects and promotes the self (Sedikides et al., 2015). However, the generality of this view has been challenged (Newman et al., 2020). In our call for this Research Topic, we explicitly advocated for nostalgia research that adds to the existing body of evidence as well as for research on existing controversies. We classify seven out of the 12 contributions as investigating nostalgia's benefits or downsides (Abeyta et al.; Newman and Sachs; Salmon and Wohl; Kersten et al.; Batcho; Rogers; Zhou et al.). Three additional articles are concerned with nostalgia's sociality and its benefits or downsides at the collective level (Abakoumkin et al.; Green et al.; Behler et al.). Finally, two papers extended nostalgia theorizing into new areas (FioRito and Routledge; Allison and Green). We will now introduce these articles according to this classification, followed by our outlook for possible future avenues for nostalgia research.

NOSTALGIA: A RESOURCE OR A CHALLENGE?

The first two articles are concerned with the relationship between nostalgia and loneliness. Feelings of loneliness are highly distressing and can even be associated with suicidal ideation (Stroebe et al., 2005). Nostalgia may operate as a resource against loneliness (Zhou et al., 2008). These authors found that nostalgia increases feelings of social support and thereby remedies social connectedness deficits produced by loneliness. Abeyta et al. went a step further. In four studies, they tested and found that nostalgia counteracts low social confidence and low intentions for social approach, thereby reducing loneliness. But a rather different picture emerges from the longitudinal diary study by Newman and Sachs, who found that their participants felt more nostalgic when feeling lonely, which amplified overall negative feelings.

The next two articles demonstrate salubrious effects of nostalgia that concern motivations for a

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personal future free from addiction or physical pain. Salmon and Wohl conducted an experiential analysis of individuals with gambling problems, who wrote about their past (vs. future). Those who reported more positive (vs. negative) past experiences indicated that they felt more nostalgic about their past life free of gambling as well as a greater readiness to change their gambling behavior. Kersten et al. extended relevant past work on physical pain (Zhou et al., 2012) and found that chronic pain sufferers who engaged in nostalgic (vs. ordinary) event reflection reported lower pain levels. In a second experiment, they found greater pain tolerance for nostalgizers experiencing pressure-oriented pain.

In a study examining both past and future time perspectives, Batcho examined the associations between personal and anticipatory nostalgia (missing something before it has been lost) with her participants' responses to happy and sad stories. Whereas, personal nostalgia was associated with happiness elicited from happy stories, anticipatory nostalgia was associated with sadness elicited from sad stories. Nevertheless, the link between personal nostalgia and positive affect was consistent with previous research (Sedikides et al., 2015). A refinement of the positive relationship between nostalgia and positive affect is provided by Rogers. In this experiment, the usual higher level of positive affect resulting from nostalgic (vs. control) reverie was replicated. However, when the nostalgia manipulation included recalling a past event from a more distant third person (vs. typical first person) perspective, the difference in positive affect between nostalgia and control condition vanished. Zhou et al. also examined anticipatory nostalgia, investigating its role in marketing communications. In four studies, these researchers found that eliciting anticipatory nostalgia regulated participants' affective responses as a function of the valence of the actual experience. Specifically, affective responses were more positive when anticipating losing a negative (vs. a positive) experience.

NOSTALGIA AT THE COLLECTIVE LEVEL

Nostalgia can also be experienced as a group-level emotion termed collective nostalgia (Sedikides and Wildschut, 2019). Abakoumkin et al. built on previous research that associated nostalgia proneness (nostalgia at the personality trait level), with sociality. Their two studies revealed a more general and direct link between nostalgia proneness and the collective self. In a more specific domain, Green et al. examined the university nostalgia of alumni. In two studies, they found that university nostalgia increased intentions to engage with the alma mater as well as with fellow alumni (e.g., donate more money, attend reunions), and these intentions were mediated by feelings of belonging.

The article by Behler et al. was concerned with a facet of collective nostalgia associated with contentious intergroup relations. They showed that national nostalgia felt by a sample of US voters was associated with greater threat, racial prejudice and greater support for former President Trump and his populist policies, though *personal* nostalgia was indirectly associated with lower prejudice.

THEORETICAL POINTS

Although nostalgia is concerned with the past, FioRito and Routledge propose the possibly counterintuitive view that nostalgia is a future-oriented experience (a similar argument was put forward by Sedikides and Wildschut, 2016). They base this view on ample research showing that nostalgia, by reflecting on the past, fuels future-oriented motivations. In a more specific theoretical contribution, Allison and Green examine the interrelations between nostalgia and heroism. They propose that nostalgia can promote heroism and heroism can promote nostalgia, while, ultimately, nostalgia can support the acquisition of wisdom.

OUTLOOK

To present the twelve articles of this Research Topic, we classified them into three categories. Naturally, alternative classifications are possible on different theoretical or empirical dimensions. For example, we could have classified the articles on the emotional signature of nostalgia (from positivity to negativity), time perspective emphasis, or applications (ranging from pain reduction to university donations). Regardless of classifications, some issues are still relatively unsettled or even controversial. For example, does nostalgia ease the effects of loneliness or does it amplify them? Our main suggestion for the integration of past work and the development of future research is to attend to conceptualization issues. For example, we think that the way nostalgia was conceptualized and presented to participants was not the same in Abeyta et al. and Newman and Sachs. Another example: the conceptualization of nostalgia with a view to the future might be related to loss (Batcho; Zhou et al.) or to gain (Salmon and Wohl; FioRito and Routledge). In sum, the state of nostalgia science is healthy and far from settled. Broader and more encompassing conceptual frameworks may be proposed to help guide future work as well as facilitate some resolution of currently controversial issues. Research is accelerating rather than waning, and much new territory has yet to be explored.

AUTHOR CONTRIBUTIONS

GA and JG contributed substantially and directly both to the relevant work on the Research Topic as well as to the Editorial. Both authors approved the submitted version.

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BRIEF RESEARCH REPORT
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When Nostalgia Tilts to Sad: Anticipatory and Personal Nostalgia

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Contemporary research has showcased many benefits of nostalgia, but its bittersweet character and historical reputation as unhealthy raise the possibility of less favorable impacts. In recent studies, daily diary data highlighted nostalgia's mixed valence and suggested that nostalgia is more strongly associated with negative feelings. Variables that influence the adaptive or maladaptive dimensions of nostalgia have not yet been fully explored. Recently, a focus on *when* nostalgia is experienced relative to past and future was introduced in the construct of anticipatory nostalgia, missing the present prematurely before it has become past. Distinct from personal nostalgia, anticipatory nostalgia was found to be characterized by difficulty enjoying the present and a tendency toward sadness and worry. The present study examines the distinctive dynamics at play in anticipatory and personal nostalgia by exploring the relationship between each type of dispositional nostalgia and reported experience with happy and sad stories. The Nostalgia Inventory, the Survey of Anticipatory Nostalgia, and a brief form of the PANAS were completed by 144 undergraduates (110 women), who rated their exposure and reactions to happy and sad stories. Reported frequency of exposure to happy and sad stories was related to dispositional happiness and sadness. Personal and anticipatory nostalgia did not differ in frequency of exposure to happy and sad stories, but they did differ in reactivity to and learning from sad stories. Findings highlight the importance of the timing of nostalgia, consistent with the distinction between nostalgia for the past and nostalgia for what is still present.

Keywords: personal nostalgia, anticipatory nostalgia, stories, personality, emotion

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INTRODUCTION

In contrast to nostalgia's dark origins in medical history as a disease construct, contemporary researchers have largely rediscovered nostalgia as a healthy psychological phenomenon. Empirical evidence has contradicted historical arguments that nostalgia reflects an inability to accept the loss of the past or serves as an obstacle to living in the present or moving forward (Werman, 1977; Kaplan, 1984, 1987). Presumed maladaptive qualities have been replaced by documented beneficial functions, including strengthened social connectedness, continuity of self, enhanced self-esteem, adaptive coping strategies, meaning in life, and comfort in the face of threatened mortality (Batcho, 1998, 2013; Wildschut et al., 2006, 2010; Batcho et al., 2008; Routledge et al., 2008; Zhou et al., 2008; Iyer and Jetten, 2011; Cheung et al., 2013; Stephan et al., 2014; Sedikides et al., 2015).

However, recent research has revived questions about possible unfavorable aspects of nostalgia by highlighting its distinctive bittersweet nature (Larsen et al., 2001; Larsen and McGraw, 2011, 2014; Hepper et al., 2012). While most studies have found that nostalgia increases positive affect,

instances of elevated negative affect, including sadness, have been identified (Zinchenko, 2011; Stephan et al., 2012; Newman et al., 2019). The extent to which nostalgia is uplifting and helpful or bitter and counterproductive might depend upon personality traits or contextual variables (Barrett et al., 2010; Köneke, 2010; Wildschut et al., 2010, 2019; Hart et al., 2011; Iyer and Jetten, 2011; Seehusen et al., 2013; Abeyta et al., 2014; Garrido, 2018). One largely unexplored variable is the timing of nostalgia (Batcho, 2020). As an experience that unfolds over time, nostalgia's impact might depend upon the cognitive appraisal that directs the feelings and thoughts generated during a nostalgic episode.

When nostalgia focuses on loss that has not yet occurred, the sadness of anticipated loss is premature and the experience becomes a paradoxical phenomenon of enjoying the present while missing it as if already relegated to the past. Dubbed anticipatory nostalgia, such premature nostalgia has been introduced as a construct in its own right (Batcho and Shikh, 2016; Bergs et al., 2019). A form of nostalgia by definition, it can be distinguished from personal nostalgia. Personal nostalgia is missing what has been lost, whereas anticipatory nostalgia involves missing what has not yet been lost. Anticipatory nostalgia depends upon mentally creating an imagined future that gives rise to missing what will be "someday past," yet still present. By engaging abstract construal, anticipatory nostalgia might engender psychological distance from the present, decreasing direct involvement in the current concrete reality (Nussbaum et al., 2003).

Anticipatory nostalgia should not be confused with *anticipated nostalgia*. Anticipated nostalgia is the prediction or expectation that one will feel nostalgic for an aspect of the present *in the future*, not feeling nostalgic in the present. Predicting future nostalgia is an interesting cognitive process but not identical to the emotional phenomenon of feeling nostalgic before the future loss occurs. A person can expect to miss a loved one when they leave or die someday, but the expectation doesn't necessarily include the emotional component of nostalgic missing. Expecting future nostalgia has been shown to predict nostalgia after an important life transition. The finding of a greater likelihood of expecting future nostalgia for more positive experiences is not surprising, as people would be likely to expect to miss enjoyable or valued events. Expecting future nostalgia was associated with greater savoring of the experience, and post-transition nostalgia was associated with benefits, including enhanced self-esteem, social connectedness, and meaning in life (Cheung et al., 2019).

By contrast, it is not clear whether *anticipatory nostalgia*, premature missing of what is still present, shares the benefits of nostalgia for the past. Despite eliciting the sadness of loss, anticipatory nostalgia might also allow reappraisal of the present. In spite of or because of the sadness, anticipating loss during adversity might encourage effective coping by strengthening appreciation of what is good in the present and providing the comfort of knowing that difficulties will not last. Initial empirical investigations to identify the benefits or disadvantages of anticipatory nostalgia assessed anticipatory nostalgia as a dispositional trait, that is, as the tendency of individuals to experience it generally. The early studies supported the viability of anticipatory nostalgia as a construct distinguishable from personal nostalgia (Batcho and Shikh, 2016). Unlike dispositional personal nostalgia, dispositional anticipatory nostalgia was characterized by a greater tendency for people and experiences to cause worry and sadness and was more likely to occur in adverse circumstances.

The present study extends the early research by exploring the relationship between nostalgia and experience with stories. A substantial amount of the existing research on nostalgia has examined memories. Like memories, stories entail the past inherently by recounting what has happened in the past. Stories differ from memories in that the content of stories does not necessarily originate from an individual's own experience. Empirical research exploring stories is voluminous and well-established, but has focused primarily on identifying features of stories, context, and cognitive processing that influence retention and emotional and behavioral impacts (Habermas and Diel, 2010; Dunlop et al., 2011; McGinty et al., 2013; Berger et al., 2019; Landrum et al., 2019). Not yet adequately explored is the enduring or cumulative influence of emotional stories, especially those that convey personal meaning. Qualitative analyses have shown that personally relevant stories can exert a powerful lasting influence (Pratt and Fiese, 2004; Kiser et al., 2010). In their memoirs, members of the resistance during World War II explained how stories encountered during childhood generated nostalgia and played pivotal roles in their dedication to the resistance, even to the point of enduring hardships and risking death (Batcho, 2018).

The present work introduced a focus on accumulated exposure to stories over time. In an investigation of the relationship between overall exposure to stories and personal and anticipatory nostalgia, participants estimated and shared their experience with happy and sad stories. If experiencing nostalgia prematurely is less adaptive than missing what is already past, anticipatory nostalgia will be aligned with unfavorable reactions to stories, whereas personal nostalgia will be associated with positive reactions. In particular, exposure to happy and sad stories was examined to explore whether dispositional anticipatory nostalgia is associated with greater exposure, reactivity, or attraction to sad stories. If the association of anticipatory nostalgia with sadness reflects an overall sad disposition, anticipatory nostalgia would be expected to correlate with greater exposure to or recall of sad stories. If anticipatory nostalgia develops in response to sad experiences, reported exposure to sad stories would be expected to correlate with anticipatory nostalgia. However, prior research has not examined the possibility of cognitive benefits. If anticipating future loss entails helpful cognitive processing, anticipatory nostalgia will be associated with greater likelihood of learning from sad stories.

METHODS

Participants

A sample of 144 undergraduates, 110 women and 34 men, ranging in age from 18 to 39 years (Mdn = 20, SD = 2.65),

completed the study. In accordance with ethical norms of the American Psychological Association, participants were offered either a small stipend or optional extra credit for a course for their participation. The offer of a stipend helped recruit students majoring in different disciplines.

Material and Procedure

All procedures and material for the study were reviewed and approved by the college Institutional Review Board for compliance with ethical guidelines. In small groups in a laboratory room, participants completed paper forms of the Nostalgia Inventory, the Survey of Anticipatory Nostalgia, selected items from Watson and Clark's (1994) Positive and Negative Affect Schedule-Expanded Form (PANAS-X), and a survey of experience with happy and sad stories constructed for this study.

The Nostalgia Inventory assessed personal nostalgia as a dispositional trait (Batcho, 1995, 1998, 2007). Consistent with Stern's (1992) definition of nostalgia as the longing for one's past, respondents rate the extent to which they miss each of 20 items from when they were younger on a 9-point scale (1 = *Not at all*, 9 = *Very much*). The inventory is reported to have a split-half reliability of 0.78 and 1-week test-retest reliability of 0.84 (Batcho, 1995), an acceptable level of internal consistency of 0.86 as measured by Cronbach's alpha (Batcho et al., 2008), and test-retest reliability of 0.82 over a 4-week interval (Batcho et al., 2011). Consistent with prior research, the Nostalgia Inventory yielded an acceptable level of internal consistency of 0.88 as measured by Cronbach's alpha and a split-half reliability of 0.81 in this study.

The Survey of Anticipatory Nostalgia focuses on future loss rather than the past (e.g., "society will change"). Given a 9-point scale (1 = *rarely/not very*, 9 = *very often/very much*), respondents were instructed: "Sometimes we realize that something won't last forever. It can be an activity, a thing, or time with a person or group. Using the scale below, CIRCLE a number to estimate how often or to what extent you feel like you already miss each of the items before the change has happened." The survey is reported to have a split-half reliability of 0.83, 4-week test-retest reliability of 0.71, and internal consistency as measured by Cronbach's alpha of 0.87 (Batcho and Shikh, 2016). Consistent with prior research, internal consistency as measured by Cronbach's alpha was 0.88, and split-half reliability measured 0.79 in this study.

As in prior research (Batcho and Shikh, 2016), mean ratings on the Nostalgia Inventory correlated moderately with mean ratings on the Survey of Anticipatory Nostalgia, $r_{(142)} = 0.52$, $p < 0.001$.

The Survey of Experience with Stories (**Appendix**) included eight items asking participants to rate their experience with stories on a 9-point scale (1 = *rarely/not at all*, 9 = *very often/very much*). Participants rated how often they had been exposed to happy and to sad stories in general, how happy and how sad happy and sad stories made them feel, how often they choose happy and sad stories, and how often they benefit or learn from happy and sad stories. Participants were asked to describe the earliest happy and sad story they remember, as well as additional happy and sad stories. They were instructed: "You might have read it or it might have been told to you, read to you, depicted in a video or film, or have been a news story. You might have thought it was a true story or a fictional one."

Consistent with prior research (Batcho and Shikh, 2016), six items were selected (*cheerful*, *happy*, *joyful, sad*, *blue*, and *downhearted*) from the PANAS-X (Watson and Clark, 1994). Given the dispositional or trait instruction, participants rated the extent to which they had felt each item "in general, that is, on the average" on a 5-point scale (1 = *very slightly or not at all*, 5 = *extremely*).

RESULTS

Gender

Men and women did not differ in average personal nostalgia scores, $t(1, 142) = -1.768$, $p = 0.084$, $\eta_p^2 = 0.029$, but women ($M = 6.00$, $SD = 1.18$) scored higher in anticipatory nostalgia than did men ($M = 5.24$, $SD = 1.20$), $t(1, 142) = -3.29$, $p = 0.001$, $\eta_p^2 = 0.071$.

Nostalgia and Positive and Negative Affect

Ratings of PANAS-X items of generalized affect yielded additional evidence for anticipatory nostalgia as a distinct construct. Ratings from the three items *cheerful*, *happy*, and *joyful* were averaged to yield a composite measure of a tendency toward happiness. Ratings from the three items *sad*, *blue*, and *downhearted* were averaged to serve as a measure of sadness. Personal nostalgia was not correlated with happiness, $r_{(142)} = 0.06$, $p = 0.476$, or sadness, $r_{(142)} = 0.12$, $p = 0.136$, whereas anticipatory nostalgia correlated significantly with sadness, $r_{(142)} = 0.21$, $p = 0.012$, but not with happiness, $r_{(142)} = 0.14$, $p = 0.087$.

Stories

Nostalgia and Experience With Happy and Sad Stories

The relationship of personal and anticipatory nostalgia to exposure and reactions to happy and sad stories was explored in correlational analyses, with gender and dispositional sadness and happiness controlled (**Table 1**). Frequency of exposure to happy and sad stories was assessed in two ways. Participants were asked to rate overall exposure by rating how often they encountered happy and sad stories. They also recalled happy and sad stories in open-ended essays, and the number of stories reported served as an additional measure of exposure. Participants were free to recall as many stories as they could without a time limit. Subjective estimates and recall entail different cognitive processes. Consistent with such differences, the ratings and number of stories recalled were not correlated for happy stories, $r_{(142)} = 0.01$, $p = 0.922$, or sad stories, $r_{(142)} = 0.11$, $p = 0.197$, and served as independent measures. Neither type of nostalgia correlated significantly with either indicator of frequency of exposure to happy and sad stories, suggesting that people prone to personal or anticipatory nostalgia have not experienced happy and sad stories more or less often. Attraction to or preference for sad or happy stories was assessed by asking participants

TABLE 1 | Partial correlations of personal and anticipatory nostalgia with exposure and reactions to stories with gender and dispositional happiness and sadness controlled.

	Personal nostalgia		Anticipatory nostalgia	
	r	*p*	*r*	*p*
Number of happy stories	−0.04	0.634	0.03	0.743
Number of sad stories	0.02	0.829	0.06	0.466
Ratings				
Exposure to happy stories	0.03	0.693	0.02	0.777
Exposure to sad stories	0.11	0.209	0.06	0.452
Choice of happy stories	0.13	0.118	0.09	0.303
Choice of sad stories	0.05	0.565	0.14	0.102
Happy stories make happy	0.19	0.026	0.03	0.694
Sad stories make sad	0.23	0.007	0.21	0.012
Learn from happy stories	0.16	0.052	0.09	0.294
Learn from sad stories	0.05	0.584	0.21	0.012

N = 142. Controlled for gender and dispositional sadness and happiness measured by PANAS-X. PANAS-X happiness composite included Cheerful, Joyful, Happy. Sadness composite included Sad, Blue, Downhearted.

to rate how often they choose happy and sad stories. Neither type of nostalgia correlated significantly with story choice, suggesting that proneness to personal or anticipatory nostalgia does not reflect an underlying bias or preference for happy or sad material.

However, ratings suggested that they react differently to happy and sad stories emotionally and cognitively. Emotionally, personal and anticipatory nostalgia both correlated with sadness induced by sad stories, but only personal nostalgia correlated significantly with happiness elicited by happy stories. Results suggested that personal and anticipatory nostalgia differed in cognitive engagement with stories. Personal nostalgia correlated with learning from happy stories, whereas anticipatory nostalgia correlated with learning from sad stories. Consistent with prior findings of an association between anticipatory nostalgia and a tendency to be made sad by people and events, these results suggested that people prone to anticipatory nostalgia may be less reactive to happy stories. Present findings suggested that people prone to anticipatory nostalgia process sad stories in more productive ways, whereas people prone to personal nostalgia are more reactive to happy stories and process happy stories in beneficial ways.

Contributions of Nostalgia and Stories to Mood

The contributions of nostalgia and stories to dispositional mood were explored further in linear regression analyses (**Table 2**). The composite happiness ratings were examined in a linear regression analysis, with gender and mean ratings from the Nostalgia Inventory and the Survey of Anticipatory Nostalgia independent variables. The role of stories was explored with the inclusion of mean ratings of frequency of exposure to happy and sad stories, degree of happiness (sadness) induced by happy (sad) stories, and learning from happy and sad stories.

In a significant model, $F(9, 133) = 5.53$, $p < 0.001$, Adjusted $R^2 = 0.223$, gender, personal nostalgia, and anticipatory nostalgia were not significant. Dispositional happiness was predicted by the frequency of exposure to happy, but not sad stories. Similarly, happiness was predicted by the degree to which happy stories induce happiness, but not by the degree to which sad stories induce sadness, consistent with an affect-specific effect. The absence of significant effects of learning from happy or sad stories was consistent with a distinction between affective and cognitive impacts.

TABLE 2 | Summary of regression analyses on dispositional mood.

Dispositional mood	B	SE	β	*t*	*p*
Dispositional happiness					
Gender	−0.01	0.13	−0.01	−0.03	0.980
Personal nostalgia	−0.04	0.05	−0.08	−0.89	0.375
Anticipatory nostalgia	0.06	0.06	0.10	1.03	0.306
Exposure to happy stories	0.10	0.04	0.23	2.75	0.007
Exposure to sad stories	0.04	0.03	0.09	1.13	0.261
Happiness elicited by happy stories	0.19	0.05	0.36	3.82	0.000
Sadness elicited by sad stories	−0.04	0.04	−0.10	−1.20	0.232
Learning from happy stories	0.02	0.04	0.04	0.44	0.660
Learning from sad stories	0.02	0.03	0.04	0.52	0.604
Dispositional sadness					
Gender	0.10	0.18	0.05	0.56	0.580
Personal nostalgia	−0.01	0.07	−0.02	−0.20	0.844
Anticipatory nostalgia	0.11	0.07	0.15	1.47	0.145
Exposure to happy stories	−0.04	0.05	−0.08	−0.87	0.386
Exposure to sad stories	0.10	0.04	0.21	2.40	0.018
Happiness elicited by happy stories	0.03	0.07	0.05	0.52	0.602
Sadness elicited by sad stories	0.08	0.05	0.15	1.60	0.113
Learning from happy stories	0.01	0.05	0.01	0.14	0.890
Learning from sad stories	0.01	0.04	0.01	0.04	0.970

N = 143.

A parallel analysis was conducted with the composite sadness ratings as the dependent variable. In a significant model, $F(9, 133) = 1.92$, $p = 0.05$, Adjusted $R^2 = 0.055$, gender, personal nostalgia, and anticipatory nostalgia were not significant. Dispositional sadness was predicted by the frequency of exposure to sad, but not happy stories. However, sadness was not predicted by the sadness elicited by sad stories, happiness induced by happy stories, or learning from sad or happy stories.

Limitations

This study introduced a focus on stories as a vehicle for comparing emotional and cognitive reactions to cumulative meaningful experiences associated with personal and anticipatory nostalgia. Not allowing causal relationships to be determined, this exploratory study encourages future research based on experimental designs to identify variables responsible for the differences between personal and anticipatory nostalgia. Further research is needed also to explore participant variables in samples characterized by broader demographic and diversity constituents.

A fuller understanding of adaptive functions of nostalgia would be advanced with studies that identify the nature and content of the stories participants prone to personal or

anticipatory nostalgia were exposed to and remember. Similarly, future work is needed to determine how those prone to nostalgia learn or benefit from happy or sad stories. Qualitative analyses of the impactful stories can yield insights into the nature of the lessons acquired.

DISCUSSION

The present findings reinforced the importance of when nostalgia is felt relative to past and future. Results are consistent with the view of anticipatory nostalgia as distinguishable from personal nostalgia and worthy of further research as a distinct phenomenon. Stories were shown to be effective material for elucidating the roles of emotional and cognitive processes in personal and anticipatory nostalgia. Exploring reactions to stories can clarify the adaptive and maladaptive functions of nostalgia within a meaningful practical context. Access to 24 h news cycles and online venues have expanded the influence of the content and format of stories. The current findings highlight the importance of future research to understand the impact of immersion in a story-rich environment.

The present study suggests the possibility of a cumulative contribution of experience with stories to emotional well-being. Greater exposure to happy stories correlated with higher levels of dispositional happiness, and greater exposure to sad stories correlated with higher levels of dispositional sadness. The overall pattern of relationships is interesting. While dispositional happiness was related to the degree to which stories elicited happiness, sadness was related to experience with sad stories regardless of the degree of sadness the stories elicited. The present findings suggest that the emotional impact of a story depends in part upon the emotional and cognitive reactivity of the listener or viewer.

Pertinent to the current study, personal and anticipatory nostalgia were distinguished by different ways of interacting with stories. There was no evidence that differential exposure to happy and sad stories accounted for the distinction. Personal and anticipatory nostalgia both correlated with being made sad by sad stories, suggesting that participants prone to anticipatory nostalgia are not more sensitive to sad stories. However, only personal nostalgia was associated with being made happy by happy stories, suggesting that anticipatory nostalgia may be associated with less reactivity to happy stories. Furthermore, personal nostalgia was related to greater likelihood of learning from happy stories, whereas anticipatory nostalgia was associated with greater likelihood of learning from sad stories.

Prior research differentiated personal and anticipatory nostalgia by their relationships to happiness and sadness. Personal and anticipatory nostalgia both include missing, longing or yearning. In personal nostalgia, we enjoy valued aspects of our past again, thereby enjoying them twice. In anticipatory nostalgia, we have only the present to enjoy them. In fact, we feel the sadness of missing them twice, once in the actual present and once in the imagined future. Envisioning what the future might bring can be accompanied by sadness missing the present and worry about what will come next. In prior research, participants prone to anticipatory nostalgia had reported a greater tendency for people and experiences to cause them worry and sadness, but anticipatory nostalgia did not predict generalized sadness. Consistent with prior research, anticipatory nostalgia did not contribute to generalized sadness in this study, suggesting that people prone to anticipatory nostalgia are not generally unhappy.

Given that personal and anticipatory nostalgia are both emotional constructs, theorists are justified in comparing their emotional facets. The present findings highlight the wisdom of considering also the cognitive dynamics in the relationship of nostalgia to the impact of stories. Rather than generally unhappy, people prone to anticipatory nostalgia may be more likely to benefit from sad stories by learning ways of coping with current or future problems and anxiety. Their inclination to imagine the future as present may reflect conceptual thinking that enables them to apply lessons from stories to their own lives. It remains for future investigations to identify the variables or conditions underlying the emotional and cognitive dynamics that distinguish personal from anticipatory nostalgia.

The present findings encourage further research to determine the long-term effects of being immersed in happy or sad stories. The relationship of learning from sad stories with anticipatory nostalgia suggests that benefiting from stories may be facilitated by an ability to imagine how the survival or resolution of sadness in a story might apply to an individual's own life. Just as the sadness of future loss can be experienced before it is actualized, in adverse times, imagining when difficulties will have been overcome can be a source of consolation. But looking ahead brings the sad realization that the good of the present might be gone too. Future research is needed to determine if anticipatory nostalgia can be constructive in certain circumstances or applied therapeutically to remind people that time and the opportunity to be engaged in the present is fleeting. Sad stories may provide opportunities to deal with adversity safely from a distance, as anticipatory nostalgia allows loss to be confronted from a temporal distance.

In a digital age, children are growing up with expanding opportunities for exposure to stories with negative content presented in graphic media without the comforting presence of adults who can contribute meaningful perspective. The cumulative impact over time is not yet known, but the present findings suggest greater dispositional sadness with increasing exposure to sad stories. Current findings highlight the importance of identifying ways of cultivating traits or cognitive-emotional resources to buffer adverse outcomes. While sadness might be considered a maladaptive affective dimension of anticipatory nostalgia, the benefits of learning from sad material may suggest there are untapped adaptive cognitive functions of anticipatory nostalgia.

DATA AVAILABILITY STATEMENT

The datasets for this article are not publicly available because participants were not so instructed. Requests to

access the datasets should be directed to KB, batcho@lemoyne.edu.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Le Moyne College Institutional Review Board. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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Conflict of Interest: The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

APPENDIX

Survey of Experience With Stories

In general, how often have you been exposed to **happy** stories?
In general, how often have you been exposed to **sad** stories?
How **happy** do happy stories usually make you feel?
How **sad** do sad stories usually make you feel?
When you choose to watch a show or movie, read a story or read a news item online, how often do you choose a **happy** one?
When you choose to watch a show or movie, read a story or read a news item online, how often do you choose a **sad** one?
How often do you think you benefit or learn from a **happy** story?
How often do you think you benefit or learn from a **sad** story?

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OPINION
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Is Nostalgia a Past or Future-Oriented Experience? Affective, Behavioral, Social Cognitive, and Neuroscientific Evidence

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Keywords: nostalgia, shared nostalgia, motivation, self-regulation, social cognition

Nostalgia, a sentimental longing for the past, is a common, universal, and highly social emotional experience. Nostalgic reverie is centered around the self, important social connections, and personally meaningful life events (e.g., graduation; Routledge, 2015). In other words, when people bring to mind memories that make them nostalgic, they are revisiting personally meaningful life events shared with loved ones. A growing body of research positions nostalgia as a psychological resource with self-regulatory implications. Negative affective states such as sadness, loneliness, and meaninglessness trigger nostalgia and nostalgia, in turn, enhances well-being, feelings of social connectedness, and perceptions of meaning in life (e.g., Routledge et al., 2013). Building on the behavioral inhibition (BIS/avoidance motivation) and behavioral activation (BAS/approach motivation) regulatory model Carver and White (1994), research also indicates that the activation of avoidance motivation increases nostalgia, which then activates approach motivation (Stephan et al., 2014). In the present analysis, we draw on the current state of the science to propose that nostalgia is ultimately a future-oriented emotional experience. Nostalgia involves reflecting on past experiences but it motivates affective states, behaviors, and goals that improve people's future lives. In the following sections, we briefly review relevant evidence across affective, behavioral, social cognitive, and neuroscientific indicators and close by considering the need for future research focused on nostalgia as a shared experience.

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FUTURE-ORIENTED AFFECT

Nostalgia increases general well-being (Routledge et al., 2013) but also positively impacts motivation-relevant affect. For instance, nostalgia increases optimism (Cheung et al., 2013, 2016) inspiration (Stephan et al., 2015) social efficacy (Abeyta et al., 2015) and feelings of purpose in life (Routledge et al., 2011). In addition, as people get older, nostalgia makes them feel youthful and more optimistic about their health (Abeyta and Routledge, 2016). People's written accounts of nostalgic memories also frequently contain themes of appreciation for both the past and hopefulness for the future (Routledge, 2015). In short, nostalgia promotes the types of affective states that mobilize the self for action.

FUTURE-ORIENTED BEHAVIOR

Critically, nostalgia-induced affective states promote relevant behavior. For instance, health optimism triggered by nostalgia is associated with increased intentions to exercise and eat well,

as well as subsequent levels of physical activity (Kersten et al., 2016). Similarly, the social efficacy nostalgia engenders leads to increased social engagement (Abeyta et al., 2015). More broadly, when people experience nostalgia, they are subsequently more likely to engage in prosocial behavior (Stephan et al., 2014), including charitable giving (Zhou et al., 2012). Nostalgia doesn't just make people feel inspired. It drives them to act on their inspiration.

FUTURE-ORIENTED SOCIAL COGNITION

Arguably, the most compelling evidence that nostalgia is a future-oriented emotional experience is its effects on goal-related cognition, since goals are about the future. Nostalgia increases the importance people assign to relationship goals, intentions to pursue the goal of connecting with friends, and the desire to resolve a relationship problem (Abeyta et al., 2015). More broadly, nostalgia increases the motivation to pursue one's most important goal (Sedikides et al., 2017).

Given the social nature of nostalgia, its impact on goals may be strongest in the interpersonal domain. Relatedly, nostalgia's impact on social motivation is moderated by individual differences in attachment-related avoidance (Abeyta et al., 2019). For individuals who rely on relationships for psychological comfort (low attachment-related avoidance), nostalgia increases social goal pursuit. For those who do not rely on relationships for comfort (high attachment-related avoidance), nostalgia decreases social goal pursuit. In sum, nostalgia mobilizes the self, particularly the social self.

THE MOTIVATED BRAIN

The neuroscience of nostalgia remains limited. Nostalgia proneness is positively related to right-frontal electroencephalogram (EEG) asymmetry, an indicator avoidance motivation and negative emotions (Tullett et al., 2015). Although this evidence is correlational, and thus, we cannot determine causality from it, this finding is in line with past research suggesting that negative emotions and experiences, such as loneliness and meaninglessness, trigger nostalgia as a regulatory resource (e.g., Routledge et al., 2013). More recently, Bocincova et al. (2019) found that nostalgia reduced error related negativity (ERN; a neurological indicator of avoidance motivation) in response to making a mistake in a modified Flanker task, which is consistent with research indicating that nostalgia orients people away from avoidant and toward approach-related psychological states (Stephan et al., 2014). Notably, a preregistered follow-up study did not replicate these findings (FioRito et al., 2020). Further research is required to examine if, and how, nostalgia affects motivation as measured using social neuroscientific paradigms.

THE NEED FOR AN INTERPERSONAL APPROACH: SHARED NOSTALGIA

Although previous research demonstrates that nostalgia is primarily focused on social relationships, almost no work has explored how nostalgia occurs in a social setting. Nostalgia likely frequently implicates social interaction. Indeed, up to 75 percent of conversations may include nostalgic content (Pasupathi et al., 2002; Fivush, 2008; Baron and Bluck, 2009; Beike et al., 2016). Therefore, future research should explore nostalgia as a shared experience. We define shared nostalgia as nostalgia transmitted to at least one other person or exchanged between two or more people. The nature of shared nostalgia needs to be determined. How often does this occur? With whom? What is the role of approach motivation in sharing nostalgic memories with and between others? What social and emotional benefits, if any, can be gained?

We posit that individuals share nostalgia for two purposes: to create and to maintain social connections. The future-oriented qualities of nostalgia may prompt an individual to share a nostalgic memory with an acquaintance to build closeness. Alternatively, those who discuss nostalgic memories with others may "bring online" a social approach motivation, increasing the extent to which the individuals connect. For instance, discussing a nostalgic childhood experience with a new acquaintance could promote self-disclosing behavior in both individuals. Does this boost a desire to deepen the relationship from acquaintances to friends? Moreover, people may discuss a nostalgic memory with others who also experienced in order to maintain the established intimacy. As an example, a couple reflecting together on their first date may feel intimate feelings toward one another. Does this, in turn, increase intentions to stay together?

DRAWING FROM THE PAST FOR THE FUTURE

By definition, nostalgia is a past-focused affective experience. A growing body of evidence, however, documents the future-oriented nature of nostalgia. Specifically, people can reference their nostalgic past to remind themselves what it felt to be young (Abeyta and Routledge, 2016) and loved (e.g., Cheung et al., 2013), which, in turn, promotes future-oriented behavior, such as physically caring for oneself (Kersten et al., 2016), connecting with others (e.g., Abeyta et al., 2015), and pursuing goals (e.g., Sedikides et al., 2017). There are deviations from this process, however. For instance, Cheung et al. (2019) recently introduced the concept of anticipated nostalgia. This construct is unique in that it does not rely on the reflections of the past. Instead, anticipated nostalgia is nostalgia for the present and the future (e.g., "I anticipate I will feel nostalgic about my children's childhood in the future"). Critically, Cheung et al. (2019) found that anticipated nostalgia is related to deliberate savoring techniques, such as purchasing souvenirs and documenting moments with pictures. Thus, anticipated nostalgia could be considered a future-focused experience that

promotes future-oriented behavior. When discussing the future-oriented nature of nostalgia, individual differences should be considered, as well; not everyone benefits from using nostalgia (e.g., attachment-related avoidance; Wildschut et al., 2010; Juhl et al., 2012; Abeyta et al., 2019). Future research should examine other instances in which nostalgia does not result in future-oriented behavior.

Taken together, when individuals engage in nostalgic reflection, they are not hiding in the past. They are accessing meaningful memories from the past in order to help them approach the future with purpose.

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TF and CR contributed to the writing of the manuscript.

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Combating Loneliness With Nostalgia: Nostalgic Feelings Attenuate Negative Thoughts and Motivations Associated With Loneliness

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Loneliness is difficult to overcome, in part because it is associated with negative social cognitions and social motivations. We argue that nostalgia, a positive emotional experience that involves reflecting on cherished memories, is a psychological resource that regulates these maladaptive intrapsychic tendencies associated with loneliness. We tested this hypothesis across 4 studies. Study 1 examined whether nostalgia mitigates the inverse relation between loneliness and social confidence. Studies 2, 3, and 4 examined nostalgia's potential to mitigate the inverse relation between loneliness and approach-oriented social goals and intentions. The results provided support that nostalgia mitigates reduced social confidence and low approach-oriented social goals/intentions associated with loneliness. The associations between loneliness and reduced social confidence, and loneliness and less approach-oriented social goals/intentions, respectively, were found to be weaker as a function of nostalgia. This weakening appeared to be due to nostalgia's positive effect on social confidence and approach-oriented social goals/intentions, respectively, particularly at high levels of loneliness.

Keywords: loneliness, nostalgia, social goals, social approach, social-confidence

INTRODUCTION

In an age in which technology has made connecting with others easier than ever before, people are surprisingly feeling increasingly lonely. For example, a report published by the Jo Cox Commision on Loneliness (2017) found that more than 9 million British adults report chronic feelings of loneliness. Moreover, a large-scale study of loneliness using data from older adults from 2008 and 2012 in the United States found that upward of 40% of adults over 60 feel lonely at least some of the

time (Gerst-Emerson and Jayawardhana, 2015). A wealth of research has demonstrated that chronic loneliness is a serious health risk. Specifically, chronic loneliness is linked to deficits in psychological (Cacioppo et al., 2006) and physical health (for a review, see Cacioppo and Cacioppo, 2014).

Loneliness comes from feeling that the quantity and/or quality of one's interpersonal relationships are unfulfilling or less than desired, which then leads to the persistent feeling that an individual is alone (Cacioppo et al., 2015). Thus, people suffering from chronic loneliness would want to establish positive social connections (Gardner et al., 2005). However, research indicates that loneliness is associated with low confidence about one's ability to succeed in the interpersonal domain (Solano and Koester, 1989; Cacioppo et al., 2006) and a maladaptive interpersonal motivation/goal orientation of being less inclined to pursue approach-oriented social goals (Park and Baumeister, 2015). Ultimately, these negative intrapsychic tendencies make successful social connections unlikely. Individuals who think negatively about their interpersonal competencies and who are reluctant to pursue approach-oriented interpersonal goals, such as interpersonal growth, struggle to maintain satisfying relationships (e.g., Gable, 2006; Vanhalst et al., 2015). Moreover, intervention research indicates that regulating negative thoughts and goal orientations is important for overcoming chronic loneliness. Specifically, interventions designed primarily to address the underlying negative intrapsychic tendencies associated with loneliness are more effective than interventions primarily focused on increasing opportunities for social contact, interventions focused on increasing social support, and interventions to improve social skills (Masi et al., 2011; Cacioppo et al., 2015). Therefore, it is important to identify psychological resources that are associated with or may encourage more adaptive social confidence and a more adaptive approach-oriented goal pattern among lonely individuals. We propose that nostalgia is a psychological resource that regulates loneliness by lessening the relation between loneliness and social confidence, and the relation between loneliness and reduced approach-oriented social goals.

NOSTALGIA

Even though nostalgia was once considered a disease or mental illness (for a reviews, see Batcho, 2013), contemporary treatments of this construct are in agreement that nostalgia is an emotionally complex but mostly positive experience. Laypersons, for example, consider nostalgia to be a mostly positive experience with elements of loss, as well as a revisiting of fond and personally significant memories that are primarily focused on childhood and/or social relationships (Hepper et al., 2012, 2014). Research exploring the content of nostalgic memories is consistent with laypersons' definitions of nostalgia. Specifically, this evidence indicates that nostalgia is primarily a positive emotional experience (Wildschut et al., 2006; Abeyta et al., 2015b) that is self-focused (i.e., the self plays the role of protagonist) but also social in nature, referencing feelings of love/belonging and featuring meaningful social relationships and events (Wildschut et al., 2006; Abeyta et al., 2015b).

Although pleasant sensory inputs, such as familiar scents (Reid et al., 2015) or music (e.g., Routledge et al., 2011; Abeyta et al., 2015a), have been found to induce nostalgia, people most often turn to nostalgia in distressing or threatening contexts. For example, research indicates that negative mood inductions (Wildschut et al., 2006), threats to the self (e.g., Vess et al., 2012), and challenges to a sense of meaning in life (Routledge et al., 2011) bring on line nostalgia. Most relevant to the current paper, loneliness has been found to be a potent trigger of nostalgia (Wildschut et al., 2006; Zhou et al., 2008).

People turn to nostalgia in response to distress because a wealth of research indicates that nostalgic reverie has a number of psychological benefits (e.g., Routledge et al., 2013). First, nostalgia increases positive, but not negative affect (e.g., Wildschut et al., 2006). Second, nostalgia promotes positive self-views (Vess et al., 2012), promotes authenticity (Baldwin et al., 2015), fosters self-continuity (e.g., Sedikides et al., 2015), and bolsters self-esteem (e.g., Wildschut et al., 2006; Cheung et al., 2013). Third, nostalgia has existential benefits. Nostalgia bolsters a sense of meaning in life (Routledge et al., 2011) and buffers a variety of existential threats (e.g., Routledge et al., 2008, 2014). Fourth and most relevant to the current work, nostalgia bolsters a sense of social connectedness (i.e., a sense of acceptance, belongingness, and support, e.g., Wildschut et al., 2006, 2010; Juhl et al., 2012), increases feelings of social competence (Wildschut et al., 2006; Abeyta et al., 2015a), and energizes interpersonal goals of connecting with others and deepening relationships (Abeyta et al., 2015a).

THE SOCIAL REGULATORY BENEFITS OF NOSTALGIA

Nostalgia Reduces Loneliness via Social Support

Being that nostalgia is an experience that people naturally turn to when feeling lonely and that nostalgia fosters social connectedness, it should regulate loneliness by fostering feelings of social support. Indeed, Zhou et al. (2008) found that loneliness was associated with greater nostalgia proneness (i.e., the propensity to engage in nostalgic reflection), and nostalgia proneness was, in turn, associated with greater feelings of social support. Critically, nostalgia proneness suppressed the relation between loneliness and social support; when statistically controlling for nostalgia proneness, the association between loneliness and social support became more strongly negative. In the same paper, Zhou et al. (2008) found that manipulated loneliness increased nostalgic feelings and decreased perceptions of social support. Zhou and colleagues conducted a mediation analysis by first testing the effects of the loneliness manipulation on nostalgic feelings and social support separately and then examining the effect of the loneliness manipulation on social support while controlling for the relationship between nostalgic feelings and social support. The results were that the loneliness

manipulation increased nostalgic feelings but decreased social support. Moreover, when statistically controlling for the positive relationship between nostalgic feelings and social support, the effect of the loneliness manipulation on social support was more strongly negative. Thus, Zhou and colleagues provided evidence that the tendency to recruit nostalgia in response to loneliness suppressed the effect of loneliness on reduced social support.

Nostalgia Regulates Loneliness via Maladaptive Intrapsychic Tendencies

In addition to a lack of social support, loneliness has been linked to negative intrapsychic tendencies that undermine people's ability to successfully connect with others. For example, loneliness is associated with negative thoughts about social interactions and with a reduced sense of social-confidence (Solano and Koester, 1989; Cacioppo et al., 2006). Negative attitudes about social success and a lack of social confidence have been linked to difficulty communicating with other people (Solano and Koester, 1989) and a decreased desire to pursue social contact (Vanhalst et al., 2015), both of which can contribute to the loss of social bonds (Duck et al., 1994). Additionally, loneliness is inversely associated with an approach or promotion-oriented goal focus (Park and Baumeister, 2015). People who are less inclined to pursue approach-oriented social goals such as intimacy experience negative interpersonal outcomes (Elliot et al., 2006; Gable, 2006).

In sum, negative intrapsychic tendencies of low social confidence and reduced social approach goal focus associated with loneliness set lonely people up for unsatisfying interpersonal interactions, potentially exacerbating loneliness. There is reason to believe that nostalgia regulates these negative social cognitions and goal orientations. Nostalgic reminiscence typically involves people revisiting their most cherished social memories (Wildschut et al., 2006; Abeyta et al., 2015a,b), an experience that has been found to strengthen perceptions of confidence in the interpersonal domain (Abeyta et al., 2015a). Research suggests that nostalgia may also be involved in regulating the tendency for lonely people to be less motivated to pursue approach-oriented social goals. Nostalgia is theorized as an active coping resource that regulates distress and instigates fundamental energies aimed at realizing positive end states (e.g., Stephan et al., 2014). Indeed, research indicates that distressing situations trigger nostalgia and nostalgia promotes positive emotions and views of the self (Wildschut et al., 2006). Building on this research, Stephan et al. (2014) provided evidence that nostalgia generally regulates avoidance-related motivation and increases approach-related motivation (Stephan et al., 2014; Tullett et al., 2015). Moreover, a recent study found that induced nostalgia reduced the amplitude of the event-related negativity, a neural marker of defensive motivation (Bocincova et al., 2019). According to the hierarchical model of approach-avoidance motivation (Elliot and Church, 1997), motivation, defined as disposition or triggered action tendencies, leads to the adoption of specific goals. Building on the hierarchical model of approach-avoidance motivation (Elliot and Church, 1997), research that nostalgia instigates approach motivation (Stephan et al., 2014), and research that nostalgia is prototypically focused on social relationships (e.g., Hepper et al., 2014; Abeyta et al., 2015b). Abeyta et al. (2015b) proposed that nostalgia promotes approach-oriented social goals such as growth, intimacy, and interpersonal repair. Indeed, this research found that engaging in nostalgic reverie energized approach-oriented goals of establishing, deepening, and repairing social bonds (Abeyta et al., 2015a).

THE PRESENT RESEARCH

The purpose of the current research was to test the predictions that nostalgic feelings regulate negative thoughts about ones' ability to succeed in interpersonal relationships and weak goals/intentions for establishing deep bonds that are associated with loneliness. There are two possible models as to how nostalgia may operate to regulate loneliness via intrapsychic tendencies; nostalgia may mediate the relation between loneliness and negative intrapsychic tendencies or moderate the relation. The mediation model supposes that nostalgia is a response to loneliness, because nostalgia tends to involve longing for relationships from the past. Research supporting the mediation model has demonstrated that people identify loneliness as a common trigger for nostalgic reverie (Wildschut et al., 2006), that manipulated loneliness increases nostalgic feelings (Wildschut et al., 2006; Zhou et al., 2008), and that individuals high in trait loneliness report engaging in nostalgia more frequently (Zhou et al., 2008). As a response to loneliness, the mediation model proposes that nostalgia regulates loneliness. As previously mentioned, research showing that trait nostalgia suppresses the inverse relation between trait loneliness and perceptions of social support supports the mediation model (Zhou et al., 2008).

The moderation model also proposes that nostalgia functions to regulate loneliness but does not treat nostalgia as an inevitable response to loneliness. This model has been used to explore the conditions under which people turn to nostalgia in response to loneliness or lack of social belonging. Research investigating when people turn to nostalgia in response to loneliness has shown, for example, that the association between trait loneliness and nostalgia is stronger among individuals high in psychological resilience (Zhou et al., 2008). Such findings may help explain why the correlation between loneliness and nostalgia is often small (Zhou et al., 2008). For the present research, we based our hypothesis on the moderation model because our intention was to investigate how the association between trait loneliness and negative intrapsychic tendencies change when people are experiencing state nostalgic feelings, compared to when they are not. However, the correlational nature of Studies 1–3 allowed us to also consider the mediation model prior to the experimental approach taken in Study 4.

In Studies 1–3, we explored this non-experimentally. Whereas past research testing the mediation model measured nostalgia and loneliness as traits (Zhou et al., 2008), we endeavored to measure loneliness as a trait and nostalgia as a state. We accomplished this by instructing participants to think about their general experiences when completing the loneliness inventory but consult their feelings in the

moment when completing the nostalgia inventory. In addition to trait loneliness and state nostalgia, we measured state feelings of social confidence (Study 1) and approach-oriented social goals/intentions (Studies 2 and 3). Consistent with past research on the association between loneliness and negative intrapsychic tendencies (e.g., Cacioppo et al., 2006; Park and Baumeister, 2015), we hypothesized that trait loneliness would be associated with lower social confidence in Study 1 (Hypothesis 1a) and that trait loneliness would be associated with lower less approach-oriented social goals/intentions (Hypothesis 1b). Consistent with past research that nostalgia promotes social confidence and increases commitment to approach-oriented social goals (Abeyta et al., 2015a), we hypothesized that nostalgic feelings would be positively associated with social confidence in Study 1 (Hypothesis 2a) and that nostalgic feelings would be positively associated approach-oriented goals in Studies 2 and 3 (Hypothesis 2b).

While there is ample evidence that trait loneliness is associated with nostalgia proneness (e.g., Wildschut et al., 2006; Zhou et al., 2008), we did not anticipate a strong correlation between trait loneliness and state nostalgic feelings. Lonely people may be more prone to engage in nostalgic reverie because they tend to experience situations that trigger feelings of loneliness or social exclusion more frequently (Hanley-Dunn et al., 1985) and triggered feelings of loneliness increase nostalgic feelings (e.g., Wildschut et al., 2006). However, it is uncertain whether lonely people experience nostalgia when environmental triggers of loneliness are lacking. Measuring trait loneliness and state nostalgia allowed us to test this question.

The lack of strong correlation would enable us to test whether the relationship between trait loneliness and negative intrapsychic tendencies is impacted when people naturally experience nostalgia. In Study 1, we hypothesized that the relation between loneliness and lower social confidence would be weaker as a function of increased nostalgic feelings, because stronger feelings of nostalgia would correspond with greater social confidence, particularly at higher levels of loneliness (Hypothesis 3a). In Studies 2 and 3, we hypothesized that the relation between loneliness and reduced approach-oriented social goals/intentions would be weaker as a function of increased nostalgic feelings, and approach-oriented social goals/intentions, particularly at higher levels of loneliness (Hypothesis 3b).

In Study 4, we adopted an experimental approach to investigate the potential for nostalgia to regulate the negative intrapsychic tendencies associated with loneliness. We manipulated loneliness instead of measuring it, and rather than rely on naturally occurring feelings of nostalgia we induced nostalgia. Additionally, we assessed approach-oriented social intentions. Once again, we expected nostalgia to moderate the impact of loneliness on reduced approach-oriented goal focus, by increasing approach-oriented social intentions, particularly at high levels of loneliness (Hypothesis 3c).

Sample Size Determination

We planned to test for the main effects of loneliness and nostalgia, as well as their interaction, using hierarchical linear regressions in Studies 1, 2, and 3, and a 2 × 2 between-subjects analysis of variance (ANOVA) in Study 4. We calculated the minimal sample size for all studies using G*Power version 3.1.9.2 (Faul et al., 2007). Based on our design for Studies 1, 2, and 3, the small to medium effect size was $f^2 = 0.08$, power was 0.80, alpha was set at 0.05, and the required minimum sample size was 139, but in all cases, larger samples were secured. Based on our design for Study 4, the small to medium effect size was $\eta_p{}^2 = 0.03$, power was 0.80, alpha was set at 0.05, and the minimum sample size was 156, and therefore, we endeavored to recruit at least 200 participants. We ran Study 4 on Amazon Mechanical Turk (AMT) and manipulated loneliness with a false-feedback paradigm. Because recent research suggests that AMT participants are experienced with deception in psychological research and that this familiarity can undermine the validity of experimental paradigms (for a review see, Hauser et al., 2019), we decided to oversample. As a rough rule of thumb, we planned on recruiting double the desired sample size.

STUDY 1

The purpose of Study 1 was to investigate nostalgia's potential to regulate the tendency for chronically lonely individuals to hold negative attitudes about their ability to attain/maintain interpersonal relationships (e.g., Cacioppo et al., 2006). Specifically, we tested whether nostalgic feelings moderate the inverse relation between loneliness and social confidence. We accomplished this aim by assessing trait loneliness, state nostalgia, and feelings of social confidence. We hypothesized that loneliness would be associated with reduced social confidence. However, we expected that this association would be weaker when people report feeling more nostalgic, because stronger feelings of nostalgia would be associated with social confidence, particularly at higher levels of loneliness.

Materials and Methods

Participants

Participants consisted of 208 undergraduate students from a mid-Atlantic university (147 female participants) who took part in the study for course credit. Participants' ages ranged from 18 to 59 years ($M = 20.11$, $SD = 4.13$).

Procedure and Materials

Participants completed an online questionnaire consisting of a loneliness questionnaire, a nostalgia inventory, and a social confidence scale.

Loneliness

Participants completed the 10-item UCLA loneliness questionnaire (Russell, 1996). Specifically, participants indicated the extent to which they feel deprived of companionship, feel isolated, and generally lack support using a 4-point response scale (e.g., "How often do you feel like people are around you but not with you?"; 1 = *never,* 4 = *always;*$\alpha = 0.88$; $M = 2.38$, $SD = 0.54$).

Nostalgia

A state version of the Nostalgia Inventory (Batcho, 1995) was used as a measure of state nostalgia, where participants were specifically instructed to respond to the Nostalgia Inventory based on how they were feeling in the moment. Participants are presented with a dictionary definition of nostalgia (i.e., "*According to the Oxford Dictionary, 'nostalgia' is defined as 'a sentimental longing for the past'*") and self-report how nostalgic they are currently feeling about 20 different aspects (e.g., "family," "places") of their past (1 = *not at all nostalgic*, 7 = *very nostalgic*; $\alpha = 0.86$; $M = 4.78$, $SD = 0.97$).

Social confidence

A 6-item scale was used to assess confidence in establishing and maintaining relationships (Abeyta et al., 2015a). Specifically, participants read the following stem, "Rate your confidence in your ability to. . ." and then responded to the following six items: ". . .establish successful social relationships," ". . .maintain social relationships," ". . .resolve conflicts in relationships," ". . .communicate effectively in social relationships," ". . .open up to others in social relationships," and ". . .approach people I don't know and strike up a conversation" (1 = *cannot do at all*, 10 = *highly certain can do*; $\alpha = 0.89$; $M = 7.42$, $SD = 1.77$).

Results

First, we conducted correlations between the measured variables. Loneliness was significantly and negatively correlated with social confidence. State nostalgia was significantly and positively associated with social confidence. Inconsistent with the mediation model, loneliness was negatively and weakly correlated with state nostalgia. These correlations is found in **Table 1**.

Next, we conducted hierarchical linear regression analyses regressing social confidence on state nostalgia (centered at the mean) and loneliness (centered at the mean) in the first step. In the second step, we added the state nostalgia × loneliness interaction. This overall equation was significantly predictive of social confidence, $R^2 = 0.27$, $F(3, 204) = 24.46$, $p < 0.001$.

This analysis revealed a significant main effect of loneliness on social efficacy, such that higher loneliness was associated with lower levels of social efficacy, $b = -1.52$, $SE = 0.20$, $t = -7.55$, $p < 0.001$, $sr^2 = 0.21$, 95% CI [−1.91, −1.12]. There was also a significant main effect of state nostalgia, such that greater feelings of nostalgia were associated with more social efficacy, $b = 0.26$, $SE = 0.11$, $t = 2.36$, $p = 0.019$, $sr^2 = 0.02$, 95% CI [0.04, 0.48]. These main effects were qualified by a significant loneliness × state nostalgia interaction, $b = 0.44$, $SE = 0.20$, $t = 2.20$, $p = 0.03$, $sr^2 = 0.02$, 95% CI [0.05, 0.84].

We probed the interaction with the Johnson and Neyman (1936) technique. The advantage of this technique is that it estimates the effect of loneliness on social confidence along the full range of nostalgia scores (Hayes and Matthes, 2009), allowing us to see how the association weakens or strengthens as a function of state nostalgia. First, we examined how the relation between loneliness and social confidence changed as a function of nostalgia. In **Figure 1A**, we have plotted the estimated effect of loneliness on social confidence across the range of state nostalgia scores and, consistent with the hypothesis, the strength of the loneliness and social confidence relation weakens (becomes less strongly negative) as a function of greater state nostalgia, becoming non-significant at very high levels of state nostalgia (greater than 6.32, between 1 and 2 SD above the mean).

For the sake of being thorough, we also examined how the relation between nostalgic feelings and social confidence as a function of loneliness. The Johnson and Neyman (1936) technique revealed that the relation between nostalgia and social confidence became more strongly positive as a function of greater loneliness, becoming statistically significant at moderate levels of loneliness (2.35, slightly below the mean; see **Figure 1B**).

Consistent with past research (e.g., Cacioppo et al., 2006), trait loneliness was associated with deficits in social confidence. Also consistent with past research (e.g., Abeyta et al., 2015a), nostalgic feelings were associated with greater social confidence. Critically, nostalgia moderated the relation between loneliness and negative social cognitive tendencies, because of its positive association with social-confidence. The association between loneliness and social-efficacy was found to be strongest at very low levels of nostalgia but to be weaker at higher levels of nostalgia. Moreover, this weakening appears to be because of nostalgia's positive association with social confidence. As can be seen in **Figure 1A**, social confidence is relatively high at low levels of loneliness and does not vary as a function of nostalgia. However, social confidence does vary as a function of state nostalgia at higher levels of loneliness, such that lonely individuals who report stronger nostalgic feelings report less of a deficit in social confidence compared lonely individuals who report weaker nostalgic feelings.

STUDY 2

An important question is whether nostalgia's impact goes beyond feelings of confidence to social goals about connecting with others. Therefore, the purpose of Study 2 was to focus on social goals/intentions. Past research has established that loneliness is associated with reduced approach-oriented goals (Park and Baumeister, 2015). We tested whether nostalgic feelings moderate this inverse relation by assessing trait loneliness, state nostalgia, and approach-oriented social goals/intentions. We hypothesized that loneliness would be associated with reduced commitment to approach-oriented social goals. However, we expected nostalgia to moderate this relation, such that the inverse relation would be weaker as a function of nostalgia, because nostalgic feelings are positively associated with approach-oriented social goals, particularly at higher levels of loneliness.

Materials and Methods

Participants

Participants consisted of 200 Amazon Mechanical Turk (AMT) workers residing in the United States (98 female participants). AMT is a valid and reliable source for psychological research (Paolacci et al., 2010; Buhrmester et al., 2011; Shapiro et al., 2013). AMT samples are comparable to traditional samples (e.g., college, community, and clinical samples) on demographic measures

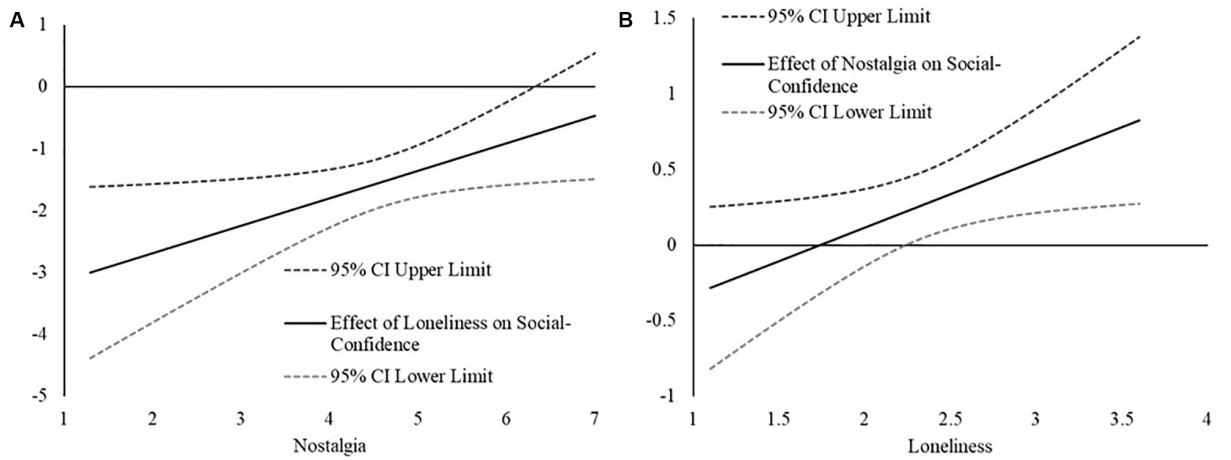

FIGURE 1 | (A) The plot represents the estimated relation between loneliness and social confidence (*y*-axis) across the range of nostalgic feelings (*x*-axis) in Study 1. The relations are considered statistically significant if the confidence intervals for the effect (CI) do not contain 0. **(B)** The plot represents the estimated relation between nostalgic feelings and social confidence (*y*-axis) across the range of loneliness scores (*x*-axis) in Study I. The relations are considered statistically significant if the confidence intervals for the effect (CI) do not contain 0.

(Paolacci et al., 2010), personality characteristics (Buhrmester et al., 2011), cognitive biases (Paolacci et al., 2010), and mental health measures (Shapiro et al., 2013). Participants' ages ranged from 18 to 66 years (M = 35.50, SD = 10.67).

Procedure and Materials

Participants were compensated $1 for completing a 10 min online questionnaire consisting of a loneliness questionnaire, a nostalgia inventory, and two measures of approach-related social goals/intentions.

Loneliness

The 10-item UCLA loneliness questionnaire (Russell, 1996) described in Study 1 was used to assess loneliness (α = 0.93; M = 2.17, SD = 0.65).

Nostalgia

The state version of the Nostalgia Inventory (Batcho, 1995) described in Study 1 was used as a measure nostalgic feelings (α = 0.92; M = 4.17, SD = 1.29).

Approach-related social goals/intentions

The questionnaire included two measures meant to assess approach-related social goals/intentions. First, Elliot et al. (2006) 4-item friendship-approach goal scale was used to assess approach-related social goals. The items assess the extent to which people are committed to goals related to interpersonal gains and growth (e.g., "I feel that I want to move toward growth and development in my friendships"; 1 = *strongly disagree,* 6 = *strongly agree*; α = 0.92; M = 4.31, SD = 1.13).

Second, Abeyta et al. (2015a) friendship conflict task was used to assess intentions for resolving conflict. The friendship conflict task instructs participants to imagine a conflict with their best friend and then responded to three items on their intentions to be about resolving the conflict (e.g., "I would dedicate myself to solving this conflict"; 1 = *strongly disagree*, 6 = *strongly agree*; α = 0.91; M = 4.65, SD = 1.16).

Results

First, we conducted correlations between the measured variables. Loneliness was significantly and negatively correlated with approach-oriented goals and intentions for resolving social conflict. State nostalgia was significantly and positively associated with approach-oriented goals and intentions for resolving friendship conflict. Loneliness was negatively correlated with state nostalgia, which is again inconsistent with the mediation model of loneliness predicting increased nostalgia. These correlations can be found in **Table 1**.

Approach-Oriented Friendship Goals

Next, we conducted hierarchical linear regression analyses regressing approach-oriented friendship goals on state nostalgia (centered at the mean) and loneliness (centered at the mean) in the first step. In the second step, we added the state nostalgia × loneliness interaction. This overall equation was significant, R^2 = 0.42, $F(3, 196)$ = 35.75, $p < 0.001$.

A regression analysis revealed a significant main effect of loneliness on approach-oriented social goals, such that greater loneliness was associated with lower levels of social approach, $b = -0.90$, SE = 0.10, $t = -9.17$, $p < 0.001$, sr^2 = 0.27, 95% CI [−1.10, −0.71]. There was also a significant main effect of state nostalgia, such that greater feelings of nostalgia were associated with greater social approach, b = 0.22, SE = 0.05, t = 4.42, $p < 0.001$, sr^2 = 0.06, 95% CI [0.12, 0.32]. These main effects were qualified by a significant loneliness × state nostalgia interaction, b = 0.25, SE = 0.06, t = 4.07, $p < 0.001$, sr^2 = 0.05, 95% CI [0.13, 0.37].

As in Study 1, probed the interaction with the Johnson and Neyman (1936) technique. First, we examined how the relation between loneliness and approach-oriented friendship

TABLE 1 | Bivariate correlations for Studies 1, 2, and 3.

	Study 1		Study 2			Study 3			
Factor	**Nostalgia**	**Social efficacy**	**Nostalgia**	**Social approach**	**Proactive social intentions**	**Nostalgia**	**Social approach**	**Participation in social studies**	**Participation in non-social studies**
Nostalgia	–	0.20*	–	0.33**	0.27**	–	0.27**	0.08	0.15*
Loneliness	-0.11	−0.48**	−0.15*	−0.56**	−0.43**	0.01	−0.27**	−0.06	0.12

*$p < 0.05$, **$p < 0.001$.

goals changed as a function of nostalgia. As can be seen in **Figure 2A**, the strength of the loneliness and approach-oriented friendship goals relation weakens (i.e., becomes less strongly negative) as a function of greater state nostalgia and becomes non-significant at very high levels (greater than 6.17, between 1 and 2 SD above the mean) of state nostalgia.

For the sake of being exhaustive, we also examined the relation between nostalgia and approach-oriented friendship goals as a function of loneliness. As is seen in **Figure 2B**, the Johnson and Neyman (1936) technique revealed that the relation between nostalgia and approach-oriented friendship goals became more strongly positive as a function of greater loneliness, becoming statistically significant at moderate levels of loneliness (1.75, between −1 SD and the mean).

Intentions for Overcoming Social Conflict

We conducted hierarchical linear regression analyses regressing intentions for overcoming social conflict on state nostalgia (centered at the mean) and loneliness (centered at the mean) in the first step. In the second step, we added the state nostalgia × loneliness interaction. This overall equation was significant, $R^2 = 0.26$, $F(3, 196) = 24.31$, $p < 0.001$.

A regression analysis revealed a significant main effect of loneliness on intentions for resolving a social conflict, such that greater loneliness was associated with lower levels of intentions, $b = -0.71$, $SE = 0.11$, $t = -6.29$, $p < 0.001$, $sr^2 = 0.16$, 95% CI [−0.93, −0.49]. There was also a significant main effect of state nostalgia, such that greater feelings of nostalgia were associated with more intentions for resolving a social conflict, $b = 0.19$, $SE = 0.06$, $t = 3.38$, $p = 0.001$, $sr^2 = 0.04$, 95% CI [0.08, 0.31]. These main effects were qualified by a significant loneliness × state nostalgia interaction, $b = 0.24$, $SE = 0.07$, $t = 3.37$, $p = 0.001$, $sr^2 = 0.04$, 95% CI [0.10, 0.37].

First, we examined how the relation between loneliness and intentions for resolving social conflict changed as a function of nostalgia. As can be seen in **Figure 3A**, the Johnson and Neyman (1936) technique revealed that the strength of the loneliness and intentions relation weakens (i.e., become less strongly negative) as a function of greater state nostalgia and becoming non-significant at very high levels (greater than 5.50, slightly less than 1 *SD* above the mean) of state nostalgia.

For the sake of being thorough, we also examined how the relation between nostalgia and intentions for resolving social conflict as a function of loneliness. As can be seen in **Figure 3B**, the Johnson and Neyman (1936) technique revealed that the relation between nostalgia and intentions for resolving social conflict became more strongly positive as a function of greater loneliness, becoming statistically significant at low to moderate levels of loneliness (1.90, between −1 SD and the mean).

Taken together, the results of Study 2 provide evidence that the tendency for lonely people to be less oriented toward approach-oriented social goals/intentions is weaker when people report feeling nostalgic. Specifically, the association between loneliness and lower social approach goal commitment was strongest at low levels of state nostalgia but was found to be weaker at higher levels of nostalgia. Similarly, the association between loneliness and a reduced desire to be in resolving a friendship conflict was found to be weaker as a function of increases in nostalgia. This weakening appeared to be explained by nostalgia's positive association with approach-oriented goals and intentions. Approach-oriented social goals and intentions are relatively high at low levels of loneliness and do not vary as a function of nostalgic feelings, whereas at higher levels of loneliness, individuals who report stronger nostalgic feelings have less of a deficit in approach goals and intentions.

STUDY 3

The purpose of Study 3 was to replicate and extend the Study 2 findings. As in Study 2, we assessed trait loneliness, state nostalgia, and approach-related social goals. We expected nostalgia to moderate the relation between loneliness and commitment to approach-related social goals in the same manner as in Study 2. To extend the Study 2 findings, we included a more behavioral measure of approach-related social goal commitment: willingness to participate in upcoming research studies that do or do not involve social interaction. Once again, we hypothesized that that the negative relation between loneliness and willingness to participate in social research would be weaker as a function of nostalgia, because nostalgia would be positively associated with willingness to participate in social research, particularly at higher levels of loneliness. Past research indicates that nostalgia broadly promotes approach-oriented motivations (e.g., Stephan et al., 2014). The inclusion of the non-social research study option allowed us to explore whether the tendency for nostalgia to moderate the relation between trait-loneliness and approach-oriented social goals extends to approach-oriented goals that are not social. Consistent with Abeyta et al. (2015a) finding that nostalgia increased intentions to participate in social but not non-social research studies, we did not expect nostalgia to moderate the relationship between loneliness and intentions to participate in a non-social research study.

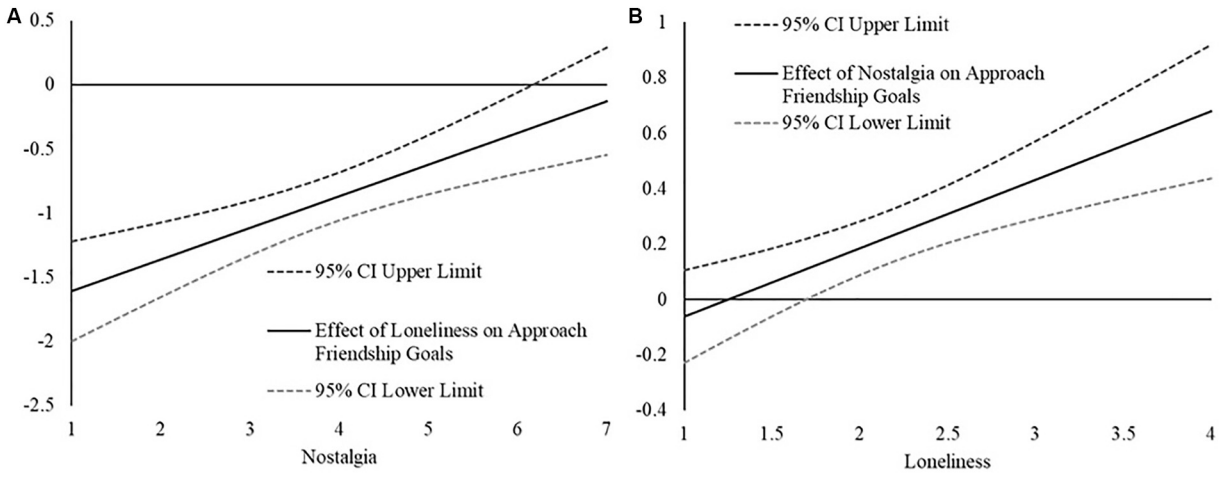

FIGURE 2 | (A) The plot represent; the estimated relation between loneliness and approach-oriented friendship goals (*y*-axis) across the range of nostalgic feeling; (*x*-axis) in Study 2. The relation; are considered statistically significant if the confidence intervals for the effect (CI) do not contain 0. **(B)** The represents the estimated relation between nostalgic feelings and approach- oriented friendship goals (*y*-axis) across the range of loneliness scores (*x*-axis) in Study 2. The relations are considered statistically significant if the confidence intervals for the effect (CI) do not contain 0.

Materials and Methods

Participants

Participants consisted of 181 undergraduate students from a Midwestern university (79 female participants). Participants' ages ranged from 18 to 35 years (M = 19.08, SD = 1.91).

Procedure

The study consisted of a computerized questionnaire. Participants completed all materials on computers in private cubicles and were fully debriefed after the study session.

Materials

Loneliness

As in Studies 1 and 2, participants completed the 10-item UCLA loneliness questionnaire (Russell, 1996; α = 0.90; M = 2.11, SD = 0.56).

Nostalgia

Participants completed the state nostalgia measure used in Studies 1 and 2 (Batcho, 1995; α = 0.88; M = 4.86, SD = 0.95).

Approach-related social goals

Elliot et al. (2006) 4-item friendship-approach goal scale used in Study 2 was used to assess approach-related social goals (α = 0.86; M = 5.38, SD = 1.05).

Future study participation task

Participants were told that one of the purposes of the study is to gauge their interest in, and to promote, future research studies. Next, participants read a description of two studies they could participate in Abeyta et al. (2015a). One of the research studies is social in nature, whereas the other study is non-social. The social study is titled "Personality and Social Interaction" and is described as a study where participants get to know a stranger by having discussions about predetermined topics. The non-social study is titled "Cognitive Problem Solving" and is described as a study testing individuals' ability to solve complex puzzles. Participants indicated (1) how interested they would be to participate in each study (1 = *not interested*, 7 = *very interested*), (2) whether or not they would like to learn more information about each study (1 = *definitely no*, 7 = *definitely yes*), and (3) whether or not they would like to participate in each study (1 = *definitely no*, 7 = *definitely yes*). Scores were computed for willingness to participate in the social research study (α = 0.95; M = 4.91, SD = 1.59) and willingness to participate in the non-social research study (α = 0.96; M = 4.81, SD = 1.79), respectively.

Results and Discussion

First, we conducted correlations between the measured variables. Loneliness was significantly and negatively correlated with approach-oriented goals but was not significantly correlated with intentions for participating in social and non-social research. State nostalgia was significantly and positively associated with approach-oriented goal and participation in non-social research studies, but was not significantly correlated with participation in social research studies. Loneliness was not significantly correlated with state nostalgia, again, inconsistent with a mediation model approach. These correlations can be found in **Table 1**.

Approach-Oriented Social Goals

Next, we conducted hierarchical linear regression analyses regressing approach-oriented friendship goals on state nostalgia (centered at the mean) and loneliness (centered at the mean) in the first step. In the second step, we added the state nostalgia × loneliness interaction. This overall equation was significant, R^2 = 0.17, $F(3, 177)$ = 13.35, $p < 0.001$.

A regression analysis revealed a significant main effect of loneliness on approach-oriented social goals, such that greater loneliness was associated with lower levels of social approach, $b = -0.50$, SE = 0.13, $t = -3.92$, $p < 0.001$, sr^2 = 0.07, 95%

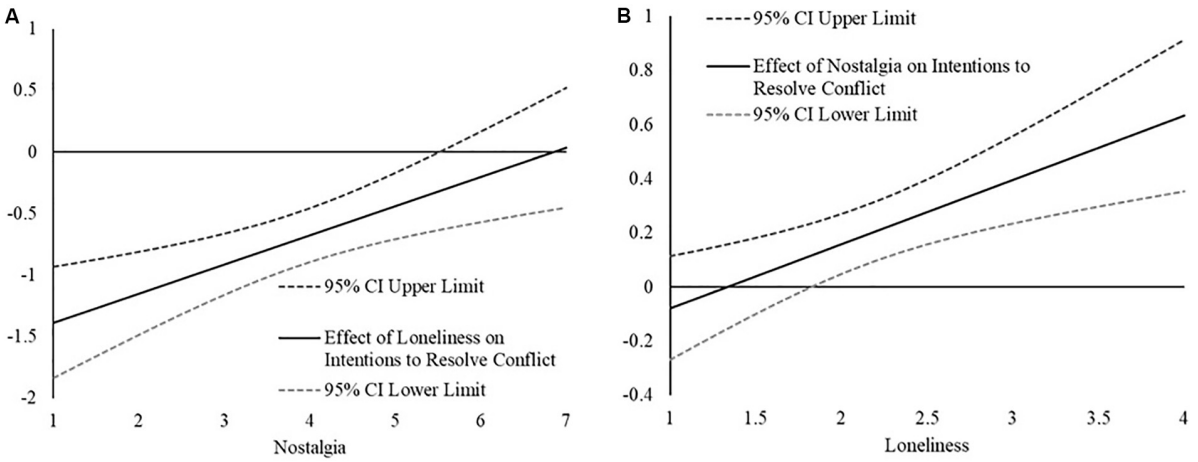

FIGURE 3 | (A) The plot represents the estimated relation between loneliness and intentions for overcoming social conflict (*y*-axis) across the range of nostalgic feelings (*x*-axis) in Study 2. The relations are considered statistically significant if the confidence intervals for the effect (CI) do not contain 0. **(B)** The plot represents the estimated relation between nostalgic feelings and intentions for overcoming social conflict (*y*-axis) across the range of loneliness scores (*x*-axis) in Study 2. The relations are considered statistically significant if the confidence intervals for the effect (CI) do not contain 0.

CI [−0.76, −0.25]. There was also a significant main effect of state nostalgia, such that greater feelings of nostalgia were associated with greater social approach, $b = 0.30$, $SE = 0.08$, $t = 3.96$, $p < 0.001$, $sr^2 = 0.08$, 95% CI [0.15, 0.45]. These main effects were qualified by a significant loneliness × state nostalgia interaction, $b = 0.39$, $SE = 0.14$, $t = 2.86$, $p = 0.005$, $sr^2 = 0.04$, 95% CI [0.12, 0.66].

First, we examined how the relation between loneliness and approach-oriented friendship goals changed as a function of nostalgia. Replicating Study 2, the Johnson and Neyman (1936) revealed that the strength of the loneliness and approach-oriented friendship goals relation weakens (i.e., becomes less strongly negative) as a function of greater state nostalgia and becomes non-significant at higher levels (greater than 5.50, between the mean and 1 *SD*) of state nostalgia.

For the sake of being thorough, we also examined the relation between nostalgia and approach-oriented friendship goals as a function of loneliness. The Johnson and Neyman (1936) technique revealed that the relation between state nostalgia and approach-oriented friendship goals became more strongly positive as a function of greater loneliness, becoming statistically significant at low to moderate (1.81, between −1 SD and the mean) levels of loneliness.

Participation in Social and Non-social Research Studies

We conducted hierarchical linear regression analyses regressing intentions to participate in social research studies on state nostalgia (centered at the mean) and loneliness (centered at the mean) in the first step. In the second step, we added the state nostalgia × loneliness interaction. This overall equation was significant, $R^2 = 0.03$, $F(3, 177) = 2.73$, $p = 0.046$.

The main effects of loneliness, $b = -0.16$, $SE = 0.21$, $t = -0.77$, $p = 0.44$, $sr^2 = 0.003$, 95% CI [−0.58, 0.25], and nostalgia, $b = 0.13$, $SE = 0.12$, $t = 1.03$, $p = 0.31$, $sr^2 = 0.006$, 95% CI [−0.12, 0.37], on willingness to participate in the social research study did not reach statistical significance. However, the loneliness × state nostalgia interaction was statistically significant, $b = 0.57$, $SE = 0.22$, $t = 2.55$, $p = 0.01$, $sr^2 = 0.03$, 95% CI [0.13, 1.01].

First, we examined how the relation between loneliness and approach-oriented friendship goals changed as a function of nostalgia. As can be seen in **Figure 4A**, the Johnson and Neyman (1936) technique revealed that the association between loneliness and intentions to participate in social research relation becomes less strongly negative as a function of greater state nostalgia, becoming non-significant at moderate levels (greater than 4.40, slightly below the mean) of state nostalgia.

We also examined how the relation between nostalgia and intentions to participate in social research as a function of loneliness. As can be seen in **Figure 4B**, the Johnson and Neyman (1936) technique revealed that the relation between nostalgia and intentions to participate in social research became more strongly positive as a function of greater loneliness, becoming statistically significant at moderate (2.35, slightly above the mean) levels of loneliness.

Next, we conducted hierarchical linear regression analyses regressing willingness to participate in non-social research on state nostalgia (centered at the mean), loneliness (centered at the mean), and the state nostalgia × loneliness interaction. This overall equation was significant, $R^2 = 0.03$, $F(3, 177) = 2.61$, $p = 0.05$.

A regression analyses revealed that the main effect of loneliness on willingness to participate in non-social research was not statistically significant, $b = 0.37$, $SE = 0.23$, $t = 1.57$, $p = 0.12$, $sr^2 = 0.01$, 95% CI [−0.09, 0.83]. There was a significant main effect of state nostalgia, such that greater nostalgia was associated with greater willingness to participate in the non-social research study, $b = 0.28$, $SE = 0.14$, $t = 2.03$, $p = 0.04$, $sr^2 = 0.02$, 95% CI [0.008, 0.55]. The loneliness × state nostalgia interaction,

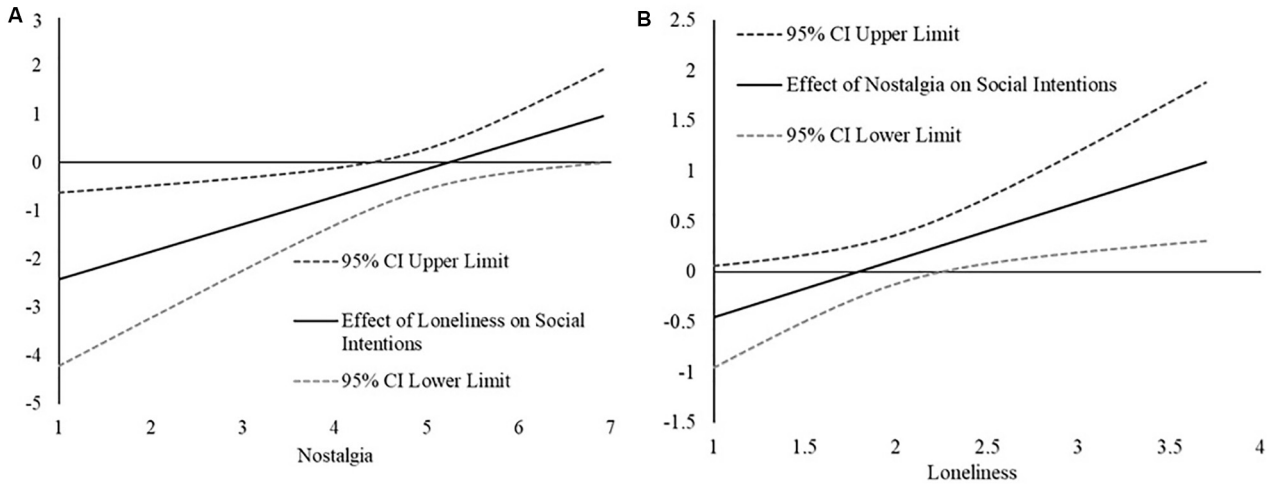

FIGURE 4 | (A) The plot represents the estimated relation between loneliness and intentions for participating in social research (*y*-axis) across the range of nostalgic feelings (*x*-axis) in Study 3. The relations are considered statistically significant if the confidence intervals for the effect (CI) do not contain 0. **(B)** The plot represents the estimated relation between nostalgic feelings and social intentions (*y*-axis) across the range of loneliness scores (*x*-axis) in Study 3. The relations are considered statistically significant if the confidence intervals for the effect (CI) do not contain 0.

$b = -0.27$, $SE = 0.25$, $t = -1.09$, $p = 0.28$, $sr^2 = 0.006$, 95% CI [−0.77, 0.22], did not reach statistical significance.

The results of Study 3 replicate and extend the Study 2 findings using a more behavioral measure of approach-related social intentions; participants' willingness to participate in an upcoming research study that involves social interaction. Loneliness was associated with reduced desire to sign-up for a research study involving social interaction. However, this tendency was found to be weaker when high levels of nostalgia were reported, because nostalgia, particularly at higher levels of loneliness, was positively associated with desire to sign up for social research studies. Finally, the observed main effect of nostalgia on willingness to participate in a non-social study is consistent with the broader literature indicating that nostalgia increases approach-oriented goals and behavior (Stephan et al., 2014).

STUDY 4

The purpose of Study 4 was to provide vital causal evidence for the patterns of data observed across the three previous non-experimental studies. We accomplished this by inducing high v low levels of loneliness, then having people reflect on a nostalgic or non-nostalgic memory, and finally assessing approach-oriented social intentions. Once again, we expected nostalgia to moderate the effect of loneliness on commitment to approach-oriented social intentions. Consistent with Studies 2 and 3, we expected loneliness to decrease approach-oriented social intentions in a control condition (i.e., when people reflect on a non-nostalgic memory) but that nostalgia would reduce this effect. Moreover, we once again hypothesized that this effect would be driven by nostalgia's association with increased approach-oriented social intentions, particularly at high levels of loneliness.

Materials and Methods

Participants

A total of 400 participants residing in the United States (175 female participants) were recruited from AMT (M_{age} = 36.09, SD_{age} = 10.61). Recent evidence indicates that AMT participants tend to be familiar with the use of deception in psychological research and that this non-naiveté can undermine validity of experimental paradigms (for a review see, Hauser et al., 2019). We thought that it was important to address this concern for the current research, because we used a false feedback paradigm to manipulate loneliness (see description in Materials section). Moreover, recently there have been a number of concerns about low-quality AMT responses from automated programs and/or non-English-speaking AMT workers outside of the United States using duplicate geolocations and server farms to complete research (Bai, 2018; Moss and Litman, 2018, Sept. 18). Due to these concerns, we developed a plan for identifying and excluding non-naïve and suspicious low-quality open-ended responses.[1] In

[1]To guard against non-naïve participants, we included the following open-ended probing question: "What were your thoughts on the loneliness feedback you received?" Prior to collecting the data, we made a plan to review participant responses and exclude any participants who specifically mentioned that they did not believe the feedback they received. Examples of excluded cases include: "I thought it was completely made up," "I knew it was fake because I'm extremely lonely on the scale and it said I wasn't," "I felt it was inaccurate"). We also planned on reviewing participant responses to the open-ended nostalgia or control writing task to screen for low-quality responses. Specifically, we planned on excluding "suspicious cases." We defined a "suspicious case" broadly as any response to the nostalgia or control task that did not follow the writing prompt and/or did not make sense. In our review, we found that a number of responses were identical. For example, 6 suspicious cases (5 in the nostalgia condition and 1 in the control condition) contained the following response: "The adjective nostalgic is often used to describe someone who is homesick..." Moreover, there were two instances where two cases had identical memory task responses and identical responses to the loneliness feedback prompt. There were also two cases where written responses appear to have been copied from articles from the internet. The other 11 cases

total, 129 cases were excluded from the analyses: 106 cases that believed the loneliness feedback was fake and 23 for having low-quality open-ended responses. This left a final sample of 271 (122 women) AMT workers (M_{age} = 35.61, SD_{age} = 10.18).

Procedure

Participants were compensated $1 for completing an online questionnaire that consisted of a loneliness manipulation task, a nostalgia or control manipulation, and a measure of approach-oriented social intentions.

Materials

Loneliness manipulation task

We adapted a false-feedback paradigm used by Wildschut et al. (2006) to manipulation loneliness. In particular, participants were randomly assigned to a low loneliness or a high loneliness condition. In both conditions, participants completed 10 items from the UCLA loneliness questionnaire (Russell, 1996) and were told that they would receive feedback on their score afterward. In the low loneliness condition, items were worded elicit disagreement (e.g., "I always feel left out," 1 = *strongly disagree,* 4 = *strongly agree*), and after completing the loneliness questionnaire participants were given their actual score and the following feedback: "Your loneliness scores is [participants summed score]. This score is in the 12th percentile of people in the United States. This means your level of loneliness is very low." In the high loneliness condition, items were worded to elicit agreement (e.g., "I sometimes feel left out," 1 = *strongly disagree*, 4 = *strongly agree*), and participants were given their actual score and the following feedback: "Your loneliness scores is [participants summed score]. This score is in the 67th percentile of people in the United States. This means your level of loneliness is well above average."

Memory reflection task

We used a version of the event reflection task to manipulate nostalgia (Wildschut et al., 2006). Specifically, participants were randomly assigned to a nostalgia or control condition. In the nostalgia condition, participants were presented with the nostalgia definition that accompanied the nostalgia inventory in Studies 1–3 and were instructed to bring to mind and write about a nostalgic memory. In the control condition, participants were instructed to bring to mind and write about any memory and were not presented with a definition of or any information about nostalgia.

Future study participation task

Participants completed the study participation task (Abeyta et al., 2015a) described in Study 3. Participants indicated (1) how interested they would be to participate in the study (1 = *not interested*, 7 = *very interested*), (2) whether or not they would like to learn more information about the study (1 = *definitely no*, 7 = *definitely yes*), and (3) whether or not they would like to participate in the study (1 = *definitely no*, 7 = *definitely yes*) in a social research study (α = 0.97; M = 5.16, SD = 2.00) and non-social research study (α = 0.96; M = 6.00, SD = 1.48), respectively.

had phrases such as "good," "very feel," and "good and nice" for the memory writing task and loneliness probing question. All "suspicious cases" and cases that expressed not believing the loneliness feedback were excluded before conducting analyses.

Results

We analyzed the data with 2 × 2 between-subjects ANOVA to determine the unique effects of the loneliness and nostalgia manipulations and their combined effect on willingness to participate in social research. The main effects of loneliness, $F(1, 267) = 0.80$, $p = 0.37$, $\eta_p^2 = 0.003$, and nostalgia, $F(1, 267) = 0.07$, $p = 0.79$, $\eta_p^2 < 0.001$, did not reach statistical significance. However, the hypothesized loneliness × nostalgia interaction did reach statistical significance, $F(1, 267) = 7.29$, $p = 0.007$, $\eta_p^2 = 0.03$. See **Figure 5** for a graph of the interaction.

To probe the interaction, we first conducted two *t*-tests to examine the effect of loneliness (high v low) within the nostalgia condition and the control condition, respectively. In the control condition, participants in the high loneliness condition reported significantly lower interest in participating in social research than did participants in the low loneliness condition, $t(131) = -2.64$, $p = 0.009$, $d = 0.46$. In the nostalgia condition, the difference between the high loneliness condition and the low loneliness condition on participation in social research did not reach statistical significance, $t(131) = 1.24$, $p = 0.22$, $d = 0.21$. Next, we conducted two *t*-tests to examine the effect of the nostalgia compared to the control condition within the low loneliness condition and the high loneliness condition, respectively. In the low loneliness condition, the difference between the nostalgia and control condition did not reach statistical significance, $t(131) = -1.72$, $p = 0.09$, $d = 0.30$. However, in the high loneliness condition, participants in the nostalgia condition reported greater interest in participating in social research than did participants in the control condition (M = 4.70, SD = 2.07), $t(131) = 2.10$, $p = 0.04$, $d = 0.36$.

Next, we conducted a 2 × 2 between-subjects ANOVA to determine the unique effects of the loneliness and nostalgia manipulations and their combined effect on willingness to participate in non-social research. The main effects of loneliness, $F(1, 267) = 0.19$, $p = 0.66$, $\eta_p^2 = 0.001$, and nostalgia, $F(1, 267) = 2.60$, $p = 0.11$, $\eta_p^2 = 0.01$, and the loneliness × nostalgia

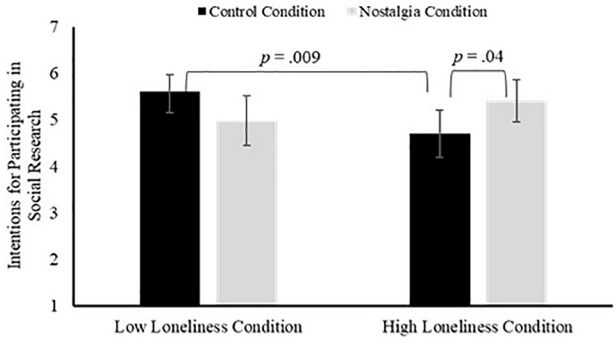

FIGURE 5 | The plot represents the effects of loneliness and nostalgia on intentions to participate in social research studies in Study 4. Significant differences are labeled with relevant *p*-value.

interaction, $F(1, 267) = 0.13$, $p = 0.72$, $\eta_p^2 < 0.001$, did not reach statistical significance.

Study 4 provided experimental evidence replicating the non-experimental evidence in the previous studies. Specifically, in a control condition in which participants brought to mind any memory, the loneliness manipulation decreased intentions to participate in a future research that involved social interaction. Nostalgia appeared to mitigate this effect. In the nostalgia condition in which participants brought to mind a nostalgic memory, the effect of the loneliness manipulation on intentions to participate in a future research that involved social interaction was small and not statistically significant. This effect was driven by nostalgia's capacity to promote approach-oriented social goals/intentions, particularly at high levels of loneliness. Nostalgia appeared to increase intentions to participate in a future research study that involved social interaction in the high loneliness condition, but not in the low loneliness condition. Finally, Study 4 provided experimental evidence that the effect of loneliness and nostalgia may be specific to the social domain, because there were no significant effects on intentions to participate in non-social research.

GENERAL DISCUSSION

Though past research has demonstrated that people turn to nostalgia when feeling lonely (Wildschut et al., 2006) and that nostalgia in turn regulates loneliness by promoting feelings of social support (Zhou et al., 2008), the current research was the first to provide evidence supporting nostalgia's potential to regulate lack of social-confidence and negative motivational tendencies associated with loneliness. Study 1 provided evidence that the inverse relation appeared to be weaker as a function of stronger nostalgic feelings, because nostalgic feelings were associated with greater social confidence, particularly at high levels of loneliness. Thus, recruiting nostalgia may mitigate the tendency for lonely people to lack confidence in their abilities to establish meaningful bonds. Studies 2, 3, and 4 built upon this finding by focusing more specifically on interpersonal goals/intentions. Studies 2 and 3 provided non-experimental evidence that nostalgia moderated the inverse relations between loneliness and approach-related friendship goals (Studies 2 and 3), loneliness and intentions for resolving friendship conflict (Study 2), and loneliness and intentions to engage in a social interaction (Study 3), respectively. Once again, these weaker inverse associations at high levels of nostalgia appeared to be due to nostalgia's positive association with approach-oriented social goals/intentions. Study 4 provided experimental evidence that nostalgia mitigates the negative relation between loneliness and a reduced social approach orientation. Specifically, manipulated loneliness decreased intentions to engage in a social interaction in a control condition in which people brought to mind an unspecified memory, but loneliness did not affect intentions to engage in a social interaction when people brought to mind a nostalgic memory. Moreover, the mitigated effect appears to be due to nostalgia's capacity to energize approach-oriented social goals/intentions, particularly at high levels of loneliness. Specifically, nostalgia increased intentions to engage in a social interaction when people were made to feel lonely.

The current findings build on recent research supporting the social cognitive and motivational benefits of nostalgia. In terms of the social cognitive benefits, past research has found that experimentally manipulated nostalgia increases feelings of social confidence/efficacy (Wildschut et al., 2006; Abeyta et al., 2015a) and generally promotes a positive future outlook (e.g., Cheung et al., 2013; Abeyta and Routledge, 2016). The findings of Study 1 complement this past research, demonstrating that feelings of nostalgia are associated with stronger social confidence. In terms of motivational benefits, past research has linked the propensity for engaging in nostalgic reverie to increased approach motivation (Stephan et al., 2014) and has found that experimentally evoked nostalgia increases approach-related social goals and intentions (Stephan et al., 2014; Abeyta et al., 2015a). The findings of Studies 2 and 3 complement these, demonstrating that feelings of nostalgia are associated with greater approach-related goals and intentions. Moreover, Study 4 provided evidence that engaging in nostalgic reveries promotes approach-related orientation, particularly when people are made to feel lonely. Taken together, the current package of studies extends this past research on the social cognitive and motivational benefits of nostalgia by providing evidence that nostalgia regulates negative social cognitions and motivational tendencies typical of chronically lonely individuals.

In the present research, loneliness was not strongly related to state nostalgia; trait loneliness was either uncorrelated with state nostalgia (Study 3) or was negatively, but weakly (Studies 1 and 2), correlated with state nostalgia. In contrast, past research (Zhou et al., 2008) has evidenced positive associations between loneliness and trait nostalgia (i.e., nostalgia proneness). This discrepancy may be resolved by considering the distinction between trait and state nostalgia. Chronically lonely people are more likely to experience situations that trigger feelings of loneliness or social exclusion (Hanley-Dunn et al., 1985), and research has found that experiences that trigger lonely feelings bring on line nostalgic feelings (Wildschut et al., 2006; Zhou et al., 2008). In general, however, chronically lonely individuals tend to ruminate on negative social experiences and their social inadequacies instead of longing for positive social memories, especially when reminders of social belonging deficits are lacking (Anderson et al., 1983; Vanhalst et al., 2015). Nostalgic memories typically involve reminiscing on cherished social experiences (e.g., Abeyta et al., 2015a), and thus chronically lonely people may feel less nostalgic than non-chronically lonely in the absence of loneliness triggers. Alternatively, the lack of association between loneliness and nostalgia may also explained by an individual difference, like psychological resilience, that we did not consider. Indeed, Zhou et al. (2008) found that loneliness was associated with greater trait nostalgia among individuals high but not low in psychological resilience. Ultimately, our goal was to focus on whether the experience of nostalgia moderates the relation between loneliness and negative intrapsychic tendencies generally, so we did not account for individual differences. This was a limitation of the

current research, and so future research should explore potential moderating individual difference variables to further understand when lonely people turn to nostalgia.

The current package of studies has broad implications for the health ramifications of chronic loneliness. As we discussed in the opening of the manuscript, chronic loneliness is a very serious risk factor for mental illness and physical disease (Cacioppo and Cacioppo, 2014). Therefore, it is important to identify interventions to alleviate it. Combined with past research that nostalgia regulates loneliness by affirming social support (Zhou et al., 2008), the current research contributes to understanding nostalgia's intervention potential. Meta-analyses of loneliness interventions indicate that interventions that solely target social support are not strong enough to effectively overcome chronic loneliness. In contrast, interventions that include techniques like cognitive behavioral therapy (CBT) that target maladaptive social cognitions associated with loneliness tend to be more effective than interventions that seek to reduce loneliness by solely focusing on bolstering social support, teaching social skills, or increasing the availability of social interactions. This is likely because loneliness is a subjective feeling of aloneness that is based on the feeling that an individual's interpersonal relationships are unfulfilling, irrespective of whether an individual is objectively socially isolated (Masi et al., 2011; Cacioppo et al., 2015). Thus, any successful intervention should focus on the thoughts and feelings individuals have about their interpersonal relationships. Past research suggests that nostalgia can be effective as part of a loneliness intervention by promoting perceptions of social support (Zhou et al., 2008). The current findings take our understanding of nostalgia's intervention potential further, by suggesting that nostalgia can help to regulate the negative social cognitions and motivational tendencies typical of lonely individuals. However, an important limitation of the current research is that our sample did not score particularly high on loneliness and consisted of internet samples. Future research should look to replicate out findings with community and/or clinical samples of people being treated for chronic loneliness. Another limitation of the current research was that we only considered two maladaptive intrapsychic tendencies typical of chronic loneliness, namely, deficits in social confidence and reduced approach-oriented social goals. Research has found that there are other maladaptive intrapsychic tendencies associated with chronic loneliness that make reversing loneliness difficult. For example, research indicates that chronically lonely individuals are more apt to focus on and be impacted by negative social interactions, compared to positive social interactions. This tendency to focus on negative social experiences and downplay or ignore positive social experiences makes overcoming loneliness difficult (Vanhalst et al., 2015). Future research should also consider whether nostalgia mitigates these negative emotional biases. The emotional impact of nostalgia has been found to be overwhelmingly more positive than negative (e.g., Wildschut et al., 2006; Abeyta et al., 2015b) and nostalgia has been found to instigate optimism (Cheung et al., 2013) so it may be particularly suited to also help overcome these negative emotional biases. Finally, future research should also consider utilizing experiences that promote nostalgic feelings as part of loneliness interventions. Used in conjunction with traditional interventions like CBT, nostalgia may foster a sense of social support and help equip people with the intrapsychic tools to connect with others. Based on the current research, stopping the cycle of loneliness may involve looking to the past for confidence and encouragement.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Rutgers University Arts and Science IRB North Dakota State University Institutional Review Board. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AA wrote the introduction, discussion, results sections, played 60% role in conception, study design, and collection of data. CR provided feedback on drafts of the manuscript and played 40% role in conception, study design, and collection of data. SK wrote the method sections for Studies 1–3. All authors contributed to the article and approved the submitted version.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2020.01219/full#supplementary-material

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Longing for the Past and Longing for the Future: A Phenomenological Assessment of the Relation Between Temporal Focus and Readiness to Change Among People Living With Addiction

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At present, the dominant motivational strategy to facilitate behavior change among those living with addiction is to focus one's attention on the better possible future that may result from cutting down or cessation. However, research is now emerging that suggests nostalgic reverie (i.e., sentimental longing) for life lived before addiction can also motivate behavior change. In the current research, we explore the conditions in which longing for a better future free of addiction and longing for one's past that was free of addition might motivate change. To this end, we assessed first-person experiential narratives of problem gamblers to better understand how they feel about their past or future without gambling, and how those feelings may relate to motivation to change. Problem gamblers were randomly assigned to either write about their lived past before gambling (n = 31) or their expected future without gambling (n = 26). Each narrative was systematically examined to identify recurrent themes and cluster these narratives according to similarly expressed themes. In the past condition, participants reported their life before gambling was either positive (Cluster P1) or difficult (Cluster P2). Gamblers with a positive past described how their life, character, close relationships, and the activities they engaged in before gambling were more meaningful. Importantly, these gamblers also reported feeling more nostalgic for life without gambling and were more ready to change their behavior than gamblers with a difficult past. In the future condition, participants were either positive (Cluster F1) or ambivalent (Cluster F2) about a future free from gambling. Gamblers who expected a positive future described how they expect their emotions, finances, and the activities they will engage in to be more positive without gambling. Compared to those ambivalent about their future, these gamblers also reported a future without addiction to be more vivid and had more desire to change their behavior, but there were no between-cluster differences in readiness to change. These findings demonstrate unique differences in how gamblers perceive their past and future without gambling, and shed a novel light on how each temporal focus might motivate behavior change among those living with addiction.

Keywords: nostalgia, temporal focus, addiction, readiness to change, gambling

INTRODUCTION

People living with addiction often do not behave in their best interest. Although they may objectively recognize their behavior is causing themselves (and others) harm (see Lesieur and Custer, 1984; Petry, 2005), the rate of behavior change is alarmingly low. This is because behavior change is difficult, as evidenced by the many people who fail to produce even a single change attempt (DiClemente et al., 1991), let alone take the necessary steps to successfully quit an addictive behavior (Miller and Rollnick, 2002). At present, the dominant motivational strategy to facilitate behavior change among those living with addiction is to facilitate longing for a better possible future that may result from cutting down or cessation (see Markus and Nurius, 1986; Ajzen, 1991; Oettingen, 2000). However, emerging research suggests that nostalgic reverie for life lived before the addiction took hold (i.e., sentimental longing for the past) has behavior change utility. In the current research, we explored the conditions under which longing for a post-addiction future and longing for the pre-addicted past may be most effective in motivating behavior change.

An individual's ability to focus on the future has its benefits. Those who have a dispositional tendency to focus on the future typically have lower rates of engagement in a variety of addictive behaviors (see Keough et al., 1999), likely because future-focused people have a higher consideration for future consequences. Of course, there are future-focused people who live with addiction – a disposition that can facilitate behavior change. For example, smokers with a future focus were more likely to report having made a quit attempt within the subsequent 8 months (Hall et al., 2012) and were more likely to have quit smoking in the subsequent 4 years (Adams, 2009).

In light of the prophylactic and behavior change utility of a future focus, it is perhaps unsurprising that many traditional theories of behavior change focus on motivational strategies that attempt to promote the person to long for a better possible future without the addictive behavior in their repertoire. For example, Oettingen's (2000) model of fantasy realization suggests fantasies about a desired future can be used to create strong commitment to a goal, which leads people to take action toward attaining that goal (Oettingen et al., 2001). Specifically, behavior change results from mental contrasting between the future and present. This is accomplished by first imagining a desired future (e.g., a future without addiction-related problems) and then reflecting on the negative reality that is impeding that future (e.g., financial loss due to excessive gambling). Pairing positive thoughts about the future with negative thoughts about current lived experiences makes both future and present simultaneously accessible (Kawada et al., 2004). This allows people to recognize the negative reality that is impeding them from realizing their desired future (Higgins and Chaires, 1980), thereby emphasizing a necessity to take action to overcome the present reality in order to attain the desired future (Oettingen, 2000).

Importantly, Oettingen's model has been applied to addictive behaviors with some success. For example, Oettingen et al. (2010) showed that when smokers engaged in mental contrasting of a positive future without smoking with the negative reality of smoking, they took action to reduce their cigarette consumption. Importantly, this occurred only when participants had high expectations of success – those who had low expectations of success deferred behavior change. Moreover, Johannessen et al. (2012) found that dieting students were more likely to act in ways congruent with their diet goal (e.g., eating fewer high-calorie foods and more low-calorie foods, being more physically active) when they engaged in mental contrasting of a desired future with the negative reality. Taken together, these results provide some indication that looking forward to a desired future (i.e., without an addictive behavior) and contrasting it with the negative reality can lead people to take action toward quitting or cutting down on that behavior (Oettingen et al., 2010).

In a like manner, Markus and Nurius' (1986) theory on possible selves argues that possible (future) selves function as incentives for behavior change. Specifically, people may be motivated to change their behavior by way of comparing the current self against a desired possible future self (which motivates approach behaviors) or a feared possible future self (which motivates avoidant behaviors; Markus and Nurius, 1986; Oyserman et al., 2004; vanDellen and Hoyle, 2008). Empirical evidence validates this supposition. Students who were presented with an image of a possible (future) exercising self significantly increased their exercise behavior in the subsequent 4 weeks, but only when they were also more oriented toward their future (i.e., higher tendency to consider future consequences; Ouellette et al., 2005). In a like manner, Hooker (1992) found that adults with a desired, health-related (future) possible self engaged in more health-related behaviors than did those who did not have a possible future self in the health domain. Indeed, lacking clear possible selves can also have consequences for behavior. As such, according to this understanding of behavior change, a lack of future orientation (i.e., when the future is vague) impedes behavior change.

Unfortunately, many people living with addiction may find it difficult to envisage a better future. For example, disordered gamblers have a skewed temporal orientation in that they tend to be present-focused (Toneatto, 1999; MacKillop et al., 2006), and fail to consider the future consequences associated with their betting decisions (Hodgins and Engel, 2002). Specifically, disordered gamblers tend to have significantly shorter time horizons in comparison to recreational gamblers and are less likely to predict events far into their future (Hodgins and Engel, 2002). These findings suggest that disordered gamblers may have difficulty planning for their future. Moreover, imagined future events among disordered gamblers typically lack detail and contextual information (Noël et al., 2017), which further undermines the planning process. As such, focusing gamblers toward a better possible future may not be the most effective means to motivate self-directed change.

If a better future is difficult for the gambler (in need of behavior change) to envision, there may be utility in focusing them on a positive past – one that was free of addiction. This is because many behavior change models recognize that the

addictive behavior is negatively affecting the self (Markus and Nurius, 1986; Oettingen, 2000; Miller and Rollnick, 2002, 2012). Indeed, addiction often results in negative changes to people's moods, behaviors, and self-esteem (Lesieur and Custer, 1984; Bergh and Kühlhorn, 1994). These changes can cause people to feel disconnected from who they were before the addiction took hold (i.e., they feel self-discontinuous). Although these feelings of self-discontinuity often represent a discontentment with the current self (Davis, 1979; Sedikides et al., 2008), the recognition that one's quality of life was better before the addiction-related problems took hold is pivotal to understanding that behavior change is in one's best interest.

For instance, Kim et al. (2017) found that feelings of self-discontinuity were associated with a greater likelihood of having attempted self-directed change over time, even when controlling for known barriers to change (e.g., shame, guilt, self-stigma). Nuske and Hing (2013) also reported that some disordered gamblers are motivated to engage in self-directed change after contrasting the positive past against the negative present reality of living with addiction. Although self-discontinuity, by definition, compares and contrasts the current self with the past self (Davis, 1979; Sani, 2008), mention of the past self is typically absent from many behavior change modalities (see Salmon et al., 2017). Given that self-discontinuity is associated with positive behavior change among people living with addiction, looking back to a more positive past (before the addiction took hold) may be an untapped avenue for self-directed change.

The clinical literature provides some clues about why a focus on a positive past may motivate change. Miller and Rollnick (2002) argued that in addition to focusing on the future, behavior change can be facilitated by encouraging reflection on the past. This technique involves motivating the client (e.g., a disordered gambler) to remember their life before problems with their addictive behavior emerged and contrasting those memories with how their life is now. According to Rosengren (2009), this process helps the person living with addiction re-establish values and reaffirm goals for the future. Given that disordered gamblers have difficulty planning for their future (Noël et al., 2017) and fail to consider the future consequences of their immediate actions (Hodgins and Engel, 2002), it would stand to reason that looking back to a more positive life lived *before* problems arose due to their gambling may be a viable means to motivate self-directed change. To the point, self-directed change may be a product of thoughts about how one's addictive behavior has worsened with time, coupled with a longing to regain what was lost (e.g., values) as a result of addiction.

In fact, longing to return to a more positive past is a natural response to negative self-change (Davis, 1979; Best and Nelson, 1985; Sedikides et al., 2015). Put another way, feeling that the self has fundamentally changed for the worse (i.e., feeling self-discontinuous) elicits nostalgic reverie (i.e., a sentimental longing) for a more favorable past (Sedikides et al., 2015). Indeed, nostalgia is colloquially understood to be a positive emotional response to thoughts of days gone by. Nostalgia places the past in a good, idealistic light, which is contrasted against the stress of the life currently lived (Davis, 1979). Importantly, nostalgia helps people to regain a sense of meaning in life (Routledge et al., 2011) and increases optimism for the future (Cheung et al., 2013) by re-establishing a sense of continuity (Sedikides et al., 2015). In other words, although nostalgia initially stems from the perception that the current self is worse off than the past self, engaging in nostalgic reflection can help people feel closer to their favorable past self. This, in turn, promotes a regained sense of self-continuity (Sedikides et al., 2015).

One mechanism by which nostalgia re-establishes a sense of self-continuity is by fostering social connectedness (Sedikides et al., 2016). That is, nostalgia can boost perceived social support (Wildschut et al., 2006, 2010), counteract feelings of loneliness (Zhou et al., 2008), and promote prosocial behaviors (Stephan et al., 2014; Sedikides and Wildschut, 2016). In doing so, the important relationships with close others held in nostalgic memories are brought to the fore, which helps people to feel reconnected with all aspects of their past self (Sedikides et al., 2016). For this reason, nostalgia has been framed as an active coping resource (Sedikides et al., 2009) that motivates action to positively address life stressors (Stephan et al., 2014). Put another way, nostalgia is functional (Stephan et al., 2014; Abeyta et al., 2015; Sedikides and Wildschut, 2016), which may manifest among people living with addiction as motivation to return to their life lived before they began engaging in the addictive behavior.

As noted by Berg and Miller (1992), disordered gamblers often refer to their past nostalgically when asked to describe a future absent of addiction. This may be because nostalgia draws the person living with addiction closer to the more favorable past that existed before the development of problems associated with the addictive behavior. Because nostalgia restores a sense of self-continuity among people who feel that there has been fundamental self-change (Sedikides et al., 2015), nostalgic reverie for the pre-addicted self should motivate self-directed behavior targeted at recapturing the longed-for past – a past without the target behavior in their repertoire.

Providing empirical support for the self-directed change utility of nostalgia, Kim and Wohl (2015) found that among problem gamblers, as well as problem drinkers, a sense self-discontinuity (measured and manipulated) heightened nostalgic reverie for the pre-addicted self. Importantly, nostalgia for the pre-addicted self was positively associated with readiness to change. More recently, Wohl et al. (2018) demonstrated that experimentally induced nostalgia (stemming from self-discontinuity) motivated disordered gamblers, as well as problem drinkers, to make a quit attempt (relative to those in a control condition). Thus, focusing people on a point in their personal past when they were free of addiction may prove beneficial. That said, Salmon et al. (2018) observed that the power of nostalgizing for the pre-addicted self was restricted to people who believed that change was possible (i.e., they had incremental beliefs about the malleability of human behavior; see Dweck, 2008). As such, just as there are limits and boundaries to the motivating properties of a future focus (e.g., when the future is vague), there are likely contexts in which a past focus fails to effectively motivate change. The purpose of the research reported herein was to shed some light on the conditions in which a future and past focus may be beneficial in motivating behavior change among people living with addiction.

Overview

In the current research, we recruited a sample of community problem gamblers who are not seeking treatment for their gambling-related problems to explore their lived past experiences before their gambling became problematic, as well as their anticipated future experiences once their gambling is no longer problematic. The aim of this qualitative exploration was to determine whether specific anchors exist within the past and future that may serve as motivation to take action to quit or cut down on problematic gambling behavior. To this end, we sought to classify various categories of lived and anticipated experiences that are associated with the extent to which gamblers are ready for and desire change. To test this idea, we used a numerically aided phenomenology approach (NAP; see Kuiken and Miall, 2001) – a procedure that allows for an assessment of different kinds of lived experiences within a set of qualitative narratives. This is accomplished via comparative reading of each narrative, which allows the researcher to identify recurring expressions and then paraphrasing those expressions to create categories of shared meanings.

By way of the NAP approach, we explored how the various meanings gamblers assign to their lived pasts and anticipated futures group together to form clusters according to the similarities in their profiles of meaning expressions. Focus was placed on the similarities and differences between the various types of lived experiences gamblers shared before their gambling became problematic. Whereas some gamblers may perceive their past before gambling as a generally positive time that they long to return to (i.e., they feel nostalgic for this time in their life), other gamblers may perceive the past as a place of pain that they are trying to avoid. Additionally, we examined the similarities and differences between gamblers' outlooks toward their future. Whereas some gamblers may look forward to a future free of gambling, others may experience anxiety when tasked with envisioning a future without gambling. After providing their narratives, participants completed a questionnaire that further assessed their perceptions of and longing for their past and future. This questionnaire helped facilitate a more complete understanding of the meaning assigned to each temporal orientation. Specifically, participants completed measures that assessed, among other things, the vividness of the past and future, their longing for each temporal dimension, and the extent to which they were ready for and desired behavior change.

MATERIALS AND METHODS

Participants

Participants were recruited from Amazon.com's Mechanical Turk (MTurk). MTurk allows "workers" to complete small tasks for monetary compensation. Buhrmester et al. (2011) found that the majority of "workers" participate out of interest or to pass the time, rather than for the sake of compensation, making these participants a good source of data. Importantly, MTurk provides a reliable and diverse participant pool that behaves in ways consistent with known effects in psychology (Crump et al., 2013), and has been shown to be a reliable and valid means to recruit gamblers, drinkers, and cannabis users (Kim and Hodgins, 2017).

Participation on MTurk was limited to those who (1) were residents of the United States, (2) have spent at least $100 on gambling activities (e.g., slot machines, poker, roulette, sports betting) in the past 12 months, (3) think they have problems with their gambling (e.g., spend too much time or money gambling), and (4) were not in treatment for their gambling. Based on this eligibility criteria, we recruited 60 community problem gamblers (33 male, 27 female) who were not seeking treatment for their gambling problems. Participants' age ranged from 21 to 73 years (M = 34.05, SD = 9.90).

The sample size was determined based on the recommendations of Kuiken and Miall (2001) to have at least 20 participants per hypothesized theme. Because two general themes (past focus and future focus) were to be examined, a sample size of 40 participants was determined to be appropriate. We added 10 participants to each theme (N = 60) to account for any poor data quality (e.g., insufficient or unclear responses).

All participants received US $3.00 for completing the study (approximately 30 min in duration). However, because the purpose of this study was to examine how problem gamblers think and feel about their past before gambling as well as their possible future without gambling, the sample used for analysis was further limited to only participants who exhibited moderate to disordered gambling severity. From the original sample of 60 participants, one participant was categorized as a low-risk gambler using the Problem Gambling Severity Index (PGSI; Ferris and Wynne, 2001), and thus was excluded from the analyses. Furthermore, two participants were also excluded from the subsequent analyses due to insufficient responses (i.e., they did not follow the writing prompts). Thus, the final sample consisted of 57 moderate and disordered gamblers (31 male, 26 female), ranging in age from 21 to 73 years (M = 34.09, SD = 10.05).

Procedure and Measured Variables

A recruitment notice was posted on MTurk advertising the study as an opportunity for people to tell their story about their problems with gambling. Interested participants provided their informed consent and were assessed on their eligibility. Only participants who (1) were residents of the United States, (2) had spent at least $100 on gambling activities (e.g., slot machines, poker, roulette, sports betting) in the past 12 months, (3) thought they have problems with their gambling (e.g., spend too much time or money gambling), and (4) were not in treatment for their gambling continued to the full survey. Participants first reported their demographics (e.g., age and gender) as well as general information about their gambling behavior (e.g., time and money spent gambling). We then presented participants with a brief preface asking them to "please read the instructions carefully and provide honest responses" before randomly assigning participants to either a past focus or a future focus condition in which they completed a series of writing tasks.

In the past focus condition, participants were asked to "take some time to think about what your life was like before your

gambling became problematic" and spend the next 10 min writing about this past. To increase the breadth of responses, additional prompts were included (i.e., "What filled your days? What were your relationships with others like? What were you like?"). A timer counting up was included on this survey page so that participants could keep track of how long they were writing for. After submitting their response, participants were then given the opportunity to add more to their story should they choose to.

Participants in the past focus condition were then presented with a series of face-valid items assessing various emotions and outcomes associated with their life before problem gambling. Specifically, participants responded to items assessing the clarity and vagueness of their past (i.e., "The life I lived before my gambling became problematic is vivid (i.e., clear) in my mind," "The life I lived before my gambling became problematic is vague (i.e., fuzzy) in my mind"), longing (i.e., "I long for the life I lived without problematic gambling"), positive and negative emotions (e.g., "When gambling wasn't problematic, I felt safe and secure in my life," "It makes me feel anxious to think about the life I lived without gambling"), a sense of meaning (i.e., "The life I lived before I started gambling problematically was full of meaning") and social connectedness (i.e., "Before my gambling became problematic, I felt more love in my life"). All items were anchored at 1 (*strongly disagree*) and 7 (*strongly agree*).

In the future focus condition, participants were presented with a similar writing prompt that was tailored toward a possible future without gambling. Specifically, they were asked to "take some time to think about what your life would look like if you decided to change your problematic gambling" and spend the next 10 min writing about this future. To increase the breadth of responses, additional prompts were included (i.e., "What would fill your days? What would your relationships with others be like? What would you be like?"). A timer counting up was included so that participants could keep track of how long they were writing for. After submitting their response, participants were then given the opportunity to add more to their story should they choose to.

Participants in the future focus condition were then presented with a similar series of face-valid items assessing various emotions and outcomes associated with their future life without gambling. Specifically, participants responded to items assessing the clarity and vagueness of their future [i.e., "The life I would live after my gambling is no longer problematic is vivid (i.e., clear) in my mind," "The life I would live after my gambling is no longer problematic is vague (i.e., fuzzy) in my mind"], longing (i.e., "I long for the life I would live without problematic gambling"), positive and negative emotions (e.g., "When my gambling is no longer problematic, I will feel safe and secure in my life," "It makes me feel anxious to think about the life I would live without gambling"), a sense of meaning (i.e., "The life I would live after I stop gambling problematically will be full of meaning") and social connectedness (i.e., "After my gambling is no longer problematic, I will feel more love in my life"). All items were anchored at 1 (*strongly disagree*) and 7 (*strongly agree*).

All participants then completed Biener and Abrams' (1991) single-item pictorial contemplation ladder, adapted for gambling behavior. Though the contemplation ladder was originally developed to assess readiness to quit smoking, it has been shown to be a strong measure of gamblers' readiness to change (Hodgins, 2001; Kim and Wohl, 2015). The contemplation ladder is continuous and is anchored at 0 (*no thought of changing*) and 10 (*taking action to change – e.g., cutting down, enrolling in a program*). A score of 0–3 corresponds with DiClemente et al. (1991) pre-contemplation stage of change (i.e., not thinking about change), a score of 4–6 corresponds with the contemplation stage (i.e., thinking about change), a score of 7 or 8 corresponds with the preparation stage of change (i.e., preparing to change within the next 30 days), and a score of 9 or 10 is indicative of the action and maintenance stages, respectively (i.e., actively modifying unhealthy behavior). Following the contemplation ladder, participants also expressed their desire to change their gambling on a scale from 0 (*no desire*) to 9 (*full desire*). Participants were then asked whether they had previously made a quit attempt. This item was: "Have you ever made an attempt to quit or cut down on your gambling?" Responses to this item were dichotomous (*yes* or *no*).

Lastly, participants completed the PGSI (Ferris and Wynne, 2001). The PGSI is a continuous nine-item measure ($\alpha = 0.85$) that assesses disordered gambling behavior (e.g., "Have you needed to gamble with larger amounts of money to get the same feeling of excitement?") and the consequences of disordered gambling (e.g., "Have you felt guilty about the way you gamble or what happens when you gamble?"). Responses were anchored at 0 (*never*) and 3 (*almost always*). Participants' scores were summed to obtain a total score (ranging from 0 to 27), which was used to classify participants into one of four categories. A gambler with a score of 0 was categorized as a non-problem gambler, 1–2 as a low-risk gambler, 3–7 as a moderate-risk gambler, and 8 or more as a disordered gambler. Participants were then directed to the debriefing page where the full nature of the study was disclosed.

For exploratory purposes, participants were also asked to either list the things they longed for most when thinking about their life before gambling became problematic (in the past condition), or to list the things they longed for most when thinking about what their life would look like if they decided to change their problematic gambling. Participants were encouraged to list as many things as they can think of in no particular order.

This research was reviewed and cleared by the Carleton University Research Ethics Board-B (CUREB-B).

RESULTS

A summary of demographics and self-reported gambling behavior in each condition can be found in **Table 1**.

Analysis of the Experiential Narratives

Participants' experiential narratives were systematically compared by the authors and two research assistants to identify similarly expressed meanings (see Kuiken and Miall, 2001 for a detailed description of these procedures). When sentences with similar meaning occurred in three or more narratives, they were paraphrased to reflect as much of their common meaning as possible. For example, the following statements from three

TABLE 1 | Demographics among participants in each condition.

	Past		Future		Total	
	n	%	*n*	%	*n*	%
Age[1]	35.65	(11.08)	32.23	(8.51)	34.09	(10.05)
Gender						
Male	16	51.6%	15	57.7%	31	54.4%
Female	15	48.4%	11	42.3%	26	45.6%
PGSI category						
Moderate-risk gambler	5	16.1%	3	11.5%	8	14.0%
Disordered gambler	26	83.9%	23	88.5%	49	89.0%
Gambling frequency						
More than once every 3 months	2	6.5%	0	0.0%	2	3.5%
More than once a month	7	22.6%	8	30.8%	15	36.3%
More than once a week	18	58.1%	14	53.8%	32	56.1%
More than once a day	4	12.9%	4	15.4%	8	14.0%
Previous change attempt						
Yes	21	67.7%	12	46.2%	33	57.9%
No	10	32.3%	14	53.8%	24	42.1%

No significant differences between conditions on demographic items ($p > 0.05$).
[1]Mean age and standard deviation reported.

different narratives were understood to express a common meaning: (1) "I was a person full of life," (2) "I was a very sweet person," and (3) "I was actually a real person." The meaning that these statements had in common was paraphrased to reflect as much of their shared meaning as possible: "I was a better person before my gambling became problematic." The wording of such paraphrases, called constituents, was established by making strict comparisons between similar meanings shared by these expressions within the set of narratives.

When a constituent was identified, each narrative within the dataset was systematically reread to determine whether the expressed meaning was present or absent. Through repeated readings, an array of 12 such constituents were identified for the past condition, and 12 constituents were identified for the future condition. Each of the constituents identified were neither rare (i.e., found in less than 10% of the narratives) nor ubiquitous (i.e., found in more than 90% of the narratives). The resulting arrays of constituents by participants for both conditions were subjected to an increase in sum of squares (Ward's) hierarchical cluster analysis (using squared Euclidian distance coefficients). For the past condition, the cluster analysis on the 12 × 31 array revealed two distinct clusters of experiential narratives of one's past before gambling. For the future condition, the same hierarchical cluster analysis on the 12 × 26 array also revealed two distinct clusters of experiential narratives of one's anticipated future without gambling.

In both the past and future conditions, the prevalence of each constituent across clusters was compared to identify the constituents that differentiated one cluster from the other. A constituent was determined as differentiating if (1) it occurred in at least three members of the cluster; (2) it occurred at least twice as often as in the other cluster; and (3) the proportion of individuals expressing it within a cluster was greater than the proportion expressing it in the other cluster using the chi-square statistic ($p < 0.05$) as criterion. As clustering techniques maximize between-cluster differences, it should be noted that the chi-square statistic was only used descriptively to determine significant differences in the proportion of constituent expressions rather than for testing significant departures from group equivalence (Everitt et al., 2004). For a more detailed account of the analyses, please see OSF[1].

Past Condition

The characteristic attributes of each cluster, along with the non-differentiating characteristics, are summarized in **Table 2**. Example excerpts from narratives whose profiles most nearly resembled the ideal type for each cluster are also presented in the summary descriptions that follow.

Cluster P1

Participants in the first past cluster ($n = 20$) indicated a major shift between their past before gambling became problematic and their life now (Constituent 5), suggesting that the presence of gambling became overwhelming (e.g., "Gambling took over my life"; "Gambling changed my life completely"). Perhaps as a result of this felt discontinuity between past and present, people perceived that their life before gambling was generally more positive (Constituent 1; e.g., "Life was calmer"; "I used to enjoy life a lot more"), suggesting that gambling has changed their life for the worse (e.g., "Everything has become harder for me"; "I had fewer problems"). Within this positive (pre-problematic gambling) past, almost everyone mentioned specifically that they

[1]https://osf.io/nujya/?view_only=862d3b9ca76944c586223ccc962dcfe5

TABLE 2 | Proportion of cluster members expressing each constituent in each of the two clusters in the past condition.

	Cluster	
Constituent	**P1**	**P2**
C1. My life was more positive before gambling became problematic	0.75*	0.00
C2. I had better social connections before my gambling became problematic	0.95*	0.18
C3. I was involved in more meaningful activities before my gambling became problematic	0.80*	0.27
C4. I was a better person before my gambling became problematic	0.45*	0.09
C5. Gambling took over my life (themes of discontinuity)	0.30*	0.00
C6. Gambling has not changed the quality of my life (or my social connections)	0.00	0.73*
C7. Parts of my past were positive and parts of my past were negative (mixed bag)	0.00	0.36*
C8. There was a pivotal (traumatic) event that triggered my gambling	0.00	0.27*
C9. I will not change my gambling behavior	0.00	0.45*
C10. I was happier before my gambling became problematic	0.35	0.09
C11. My financial situation was better before my gambling became problematic	0.60	0.27
C12. I am resistant to changing my gambling behavior	0.25	0.09

**More frequently present than in the other cluster, $p < 0.05$.*

were more socially connected before their gambling became problematic (Constituent 2). These social connections referred to time spent with family and friends (e.g., "I played sports with friends"; "Quality family times which ought to be spent together are not as numbered as before"), having more open and trusting relationships (e.g., "My husband and kids could trust me"; "I was unselfish and generous to my friends"), or having established relationships that have since declined or have been lost altogether (e.g., "I was married to the love of my life and could not have been happier"; "My relationship with my family was much more stable"). Moreover, participants also engaged in more positive and meaningful activities (that were not gambling) in their past (Constituent 3), which largely consisted of hobbies and other recreational activities (e.g., "I liked to go fishing and hunting"; "I spent more time doing leisure activities instead of figuring out everything I wanted to do to gamble"). In addition to enjoying a better quality of life, participants in Cluster P1 also described themselves as being a better person before they began gambling problematically (Constituent 4). These judgments of character often comprised their own disposition (e.g., "I was a person full of life"; "I was a very sweet person") and their values (e.g., "I was a pretty transparent, honest person"). In sum, participants in this cluster reported a significant change (for the worse) in the quality of their life after gambling became problematic, and wrote about their past fondly, claiming specific aspects of their life and their character as being more favorable.

Cluster P2

Participants in the second past cluster (n = 11) painted a less positive picture of their past. Their comments suggested that life was already quite hard before they started gambling problematically (Constituent 7), referring to both the difficult times they faced (e.g., "I seldom found myself outside of the house with little friends") and their general dissatisfaction with life (e.g., "Before it got bad I was so bored with life"). These difficult times may have triggered the onset of their problem gambling (Constituent 8), with traumatic moments typically involving the death of a loved one (e.g., "In the year before I started, two of my siblings committed suicide"; "What broke the camel's back was when I lost my uncle"). Likely because participants reported that their life was already quite difficult before their gambling became problematic, they also mentioned that the quality of their life did not change once they started gambling problematically (Constituent 6). That is, participants didn't see gambling as having made their life any worse than it already was [e.g., "My life was (and still is) quite uninteresting"; "My life was already very hard before I started gambling"]. Rather, some people see their gambling as having added something to their hard life, expressing that they are unwilling to change their gambling behavior (Constituent 9). These people often framed gambling in a positive light while ignoring the potential harms (e.g., "It's a rush I can't describe"; "Gambling really just creates a little bit of excitement") or provided their motive for continued play (e.g., "I am trying to win enough money to leave this horribly boring area"; "They say you cannot win if you do not play"). In sum, participants in this cluster described a past that was already quite difficult to begin with, and that gambling may have added an element of excitement to this difficult life.

Past Perception Ratings

To compare the two clusters further, a series of one-way ANOVAs were conducted on seven face-valid items assessing participants' perceptions of their past before problem gambling. As indicated in **Table 3**, there were no significant differences between clusters on how vivid or vague their past before problematic gambling was in their mind. There were also no cluster differences in participants' ratings of how anxious it makes them feel to think about the life they lived without gambling. However, participants in Cluster P1 (M = 5.60, SD = 1.23) expressed greater longing for their past than those in Cluster P2 (M = 3.27, SD = 1.90), $F(1,29) = 17.15$, $p < 0.001$. Moreover, participants in Cluster P1 (M = 5.95, SD = 1.00) also reported that they felt significantly more safe and secure in their life before gambling than did those in Cluster P2 (M = 3.55, SD = 1.86), $F(1,29) = 22.17$, $p < 0.001$. Participants in Cluster P1 (M = 5.65, SD = 1.04) also reported that their life before gambling became problematic was more full of meaning that did participants in Cluster P2 (M = 3.27, SD = 1.90), $F(1,29) = 20.50$, $p < 0.001$. Lastly, participants in Cluster P1 (M = 5.80, SD = 1.06) indicated that they also felt significantly more love in their life than did participants in Cluster P2 (M = 3.18, SD = 1.78), $F(1,29) = 26.70$, $p < 0.001$.

Behavior Change Measures

All participants were asked to rate the extent to which they felt ready to change their gambling behavior, in addition to the extent to which they desired change. Participants were also asked whether they had made a previous attempt to change their gambling behavior. Results indicated that participants in Cluster P1 (M = 7.15, SD = 1.60) reported a significantly greater readiness to change their gambling behavior than did participants

TABLE 3 | Past perception ratings and behavior change measures between past clusters.

	Cluster P1		Cluster P2			
Item	***M***	***SD***	***M***	***SD***	***F***	***p***
The life I lived before my gambling became problematic is vivid in my mind	5.55	1.23	5.09	2.12	0.59	0.45
The life I lived before my gambling became problematic is vague in my mind	2.55	1.64	2.73	1.85	0.08	0.79
I long for the life I lived without problematic gambling	5.60	1.23	3.27	1.90	17.15	<0.001
When gambling wasn't problematic, I felt safe and secure in my life	5.95	1.00	3.55	1.86	22.17	<0.001
It makes me feel anxious to think about the life I lived without gambling	4.10	2.02	3.73	2.33	0.22	0.65
The life I lived before I started gambling problematically was full of meaning	5.65	1.04	3.27	1.90	20.50	<0.001
Before my gambling became problematic, I felt more love in my life	5.80	1.06	3.18	1.78	26.70	<0.001
Readiness to Change	7.15	1.60	4.64	2.50	11.71	0.002
Desire to Change	6.85	1.66	5.00	2.76	5.48	0.03

in Cluster P2 (M = 4.64, SD = 2.50), $F(1,29) = 11.71$, $p = 0.002$. Participants in Cluster P1 (M = 6.85, SD = 1.66) also reported a significantly greater desire to change their gambling behavior than did participants in Cluster P2 (M = 5.00, SD = 2.76), $F(1,29) = 5.48$, $p = 0.03$. However, there were no cluster differences in the likelihood a previous attempt to change their gambling behavior had been made, $X^2(1) = 0.13$, $p = 0.72$.

Future Condition

The characteristic attributes of each cluster, along with the non-differentiating characteristics, are summarized in **Table 4**. Excerpts from narratives whose profiles most nearly resembled the ideal type for each cluster are also presented in the summary descriptions that follow.

Cluster F1

Participants in the first future cluster (n = 11) anticipated that their future will be more positive than their current situation. Within this positive future, participants reported that they expect to experience more positive emotions when their gambling is no longer problematic (Constituent 1). That is, participants reported that they will be happier (e.g., "I think I would be much happier"; "I will feel much more calm") and avoid negative emotions, such as anxiety (e.g., "I will be patient and avoid anxiety"; "My emotions will be much more stable"). Participants also described specific aspects of their life that they anticipate as being more favorable when their gambling is no longer problematic, such as their financial situation (Constituent 2). While suggesting that they would have more money in general (e.g., "I'd definitely have a lot of disposable income"; "I would have more money saved"), participants also mentioned that they can divert the money they spend on gambling into other productive areas, such as investment (e.g., "The amount being spent on gambling can be saved for a much more better form of investment"; "I could invest that money in retirement"). They also reported that they plan on engaging in more meaningful activities when their gambling is no longer a concern (Constituent 3), such as pursuing hobbies and travel (e.g., "I would have more time to read, cook, live my life"; "I would want to go on vacation and visit places") or engaging in more productive activities [e.g., "I will. . .do things that are positive to (myself) like readings books and journals, doing some exercise"; "I will have much more time focusing on immediate and future goals"]. In sum, participants in this cluster reported being optimistic about a future in which they will have more money, engage in more positive activities, and by doing so, be happier in life.

TABLE 4 | Proportion of cluster members expressing each constituent in each of the two clusters in the future condition.

	Cluster	
Constituent	**F1**	**F2**
C1. I will be happier when my gambling is no longer problematic	0.73*	0.07
C2. My finances will be better after my gambling is no longer problematic	1.00*	0.33
C3. I will engage in more meaningful activities after my gambling is no longer problematic	1.00*	0.47
C4. Parts of my life will be better, parts of my life will stay the same, and parts of my life will be worse (mixed bag)	0.00	0.73*
C5. I am resistant to changing my gambling behavior	0.27	0.67*
C6. My social connections will be better after my gambling is no longer problematic	0.91	0.60
C7. My life will be more positive when my gambling is no longer problematic	0.55	0.20
C8. I will be a better person when my gambling is no longer problematic	0.46	0.13
C9. Mention of a new beginning	0.55	0.27
C10. I will not change my gambling behavior	0.00	0.27
C11. My future without gambling is vague/uncertain	0.09	0.20
C12. My life would have been hypothetically better if I hadn't gambled (expression of upward counterfactual)	0.09	0.13

**More frequently present than in the other cluster, $p < 0.05$.*

Cluster F2

Participants in the second future cluster (n = 15) described a future with more ambivalence (Constituent 4). That is, while quitting gambling itself was described as being a positive change, they anticipated that other aspects of their life will either stay the same [e.g., "I don't know exactly how much would change"; "My life would pretty much (stay) the same"] or worsen (e.g., "I think I would feel like something is missing in my life. . .I'm worried that I would feel bored all the time"; "I would be a bit less fun and less driven"). This ambivalence extended toward thoughts of changing their gambling behavior, with participants expressing a resistance to change (Constituent 5). Though participants acknowledged that change was in their best interest, participants largely commented on how difficult change will be (e.g., "My life would be a lot better if I change my gambling, but I don't think I can stop"; "I think it would be very hard. . .I wish I could quit") as well as how frustrated they were with their current situation (e.g., "It is frustrating and I feel like a failure in life, but there's not much I can do"; "It's not like I haven't thought about this before or tried stopping"). In sum, while participants in this cluster envisioned a future where changing their gambling behavior will be rewarding, they also understand that hardships will arise when overcoming their current situation.

Future Perception Ratings

To compare the two clusters further, a series of one-way ANOVAs were conducted on seven face-valid items assessing participants' perceptions of their future when their gambling is no longer problematic. These face-valid items are identical to the past perception items, but were adapted for the future. As indicated in **Table 5**, there were no significant differences between clusters in participants' ratings of how anxious it makes them feel to think about the life they will live without gambling. However, participants in Cluster F1 (M = 6.00, SD = 0.78) reported that the life they would live after their gambling is no longer problematic is significantly more vivid in their mind than did those in Cluster F2 (M = 4.47, SD = 1.46), $F(1,24) = 10.02$, $p = 0.004$. Not surprisingly, participants in Cluster F2 (M = 4.27, SD = 2.09) in turn reported that the life they would live without gambling is significantly more vague in their mind than did participants

TABLE 5 | Future perception ratings and behavior change measures between future clusters.

	Cluster F1		Cluster F2			
Item	***M***	***SD***	***M***	***SD***	***F***	***p***
The life I would live after my gambling is no longer problematic is vivid in my mind	6.00	0.78	4.47	1.46	10.02	0.004
The life I would live after my gambling is no longer problematic is vague in my mind	2.45	1.67	4.27	2.09	5.58	0.03
I long for the life I would live without problem gambling	6.09	1.22	4.47	1.69	7.35	0.01
When my gambling is no longer problematic, I will feel safe and secure in my life	6.09	0.83	4.67	1.72	6.40	0.02
It makes me feel anxious to think about the life I would live without gambling	3.45	2.30	4.40	1.72	1.44	0.24
The life I would live after I stop gambling problematically will be full of meaning	6.27	0.91	5.33	1.18	4.89	0.04
After my gambling is no longer problematic, I will feel more love in my life	5.82	1.25	4.53	1.73	4.38	0.05
Readiness to Change	7.27	2.15	6.40	2.44	0.89	0.35
Desire to Change	6.91	2.17	5.27	1.71	4.68	0.04

in Cluster F1 (M = 2.45, SD = 1.67), $F(1,24) = 5.58$, $p = 0.03$. Moreover, participants in Cluster F1 (M = 6.09, SD = 1.22) expressed greater longing for the life they would live without gambling than did those in Cluster F2 (M = 4.47, SD = 1.69), $F(1,24) = 7.35$, $p = 0.01$. Participants in Cluster F1 (M = 6.09, SD = 0.83) also reported that they will feel significantly more safe and secure in their life without gambling than will participants in Cluster F2 (M = 4.67, SD = 1.72), $F(1,24) = 6.40$, $p = 0.02$. Participants in Cluster F1 (M = 6.27, SD = 0.91) also reported that their life without gambling will be significantly more full of meaning than did participants in Cluster F2 (M = 5.33, SD = 1.18), $F(1,24) = 4.89$, $p = 0.04$. Lastly, participants in Cluster F1 (M = 5.82, SD = 1.25) indicated that they will feel more love in their life than will participants in Cluster F2 (M = 4.53, SD = 1.73), $F(1,24) = 4.38$, $p = 0.05$.

Behavior Change Measures

All participants were asked to rate the extent to which they felt ready to change their gambling behavior, in addition to the extent to which they desired change. Participants were also asked whether they had made a previous attempt to change their gambling behavior. Results indicated that participants in Cluster F1 (M = 7.27, SD = 2.15) did not differ from participants in Cluster F2 (M = 6.40, SD = 2.44) in the extent to which they were ready to change their gambling behavior, $F(1,24) = 0.89$, $p = 0.35$. However, participants in Cluster F1 (M = 6.91, SD = 2.17) reported a significantly greater desire to change their gambling behavior than did participants in Cluster F2 (M = 5.27, SD = 1.71), $F(1,24) = 4.68$, $p = 0.04$. Lastly, there were no cluster differences in the likelihood that a previous attempt to change their gambling behavior had been made, $X^2(1) = 0.54$, $p = 0.46$.

DISCUSSION

The aim of the current study was to learn about how problem gamblers think and feel about their life before gambling became problematic, as well as their anticipated future when their gambling is no longer problematic. To this end, we classified concrete experiential accounts of the past as well as the future provided by problem gamblers. Doing so allowed for the possibility that there is more than one qualitatively distinct lived past experience or anticipated future experience. Results from the current study help to articulate the shared meaning that people give to their past lived experiences and the future they envision for themselves without problem gambling. Importantly, results also shed light on the conditions under which a past or future focus can effectively ready oneself for behavior change.

There were two different ways that gamblers wrote about their past experiences. The first (and most common) way to describe their past was of general positivity. These gamblers placed their past before gambling in an idealistic light, emphasizing the quality of their character, their relationships, and the array of meaningful activities they participated in. They also contrasted their favorable past against the hardships they currently face as a result of their gambling, and reported a longing to return to their past before gambling. The clustering of these constituents suggests that gamblers with a positive past may experience nostalgia as a result of the discontinuity that their problematic gambling behavior caused (Kim and Wohl, 2015; Sedikides et al., 2015; Salmon et al., 2018; Wohl et al., 2018). A second way that gamblers wrote about their past was of a life that was already quite difficult before gambling became problematic. The negative aspects of their past experiences involved periods of boredom or general dissatisfaction, as well as traumatic events that served as a trigger for the onset of their gambling. People who described such difficulties in their past also expressed (an unprompted) unwillingness to change their gambling behavior. As such, these people may be motivated to continue gambling to cope with the negative life events in their past (Blaszczynski and Nower, 2002; Stewart and Zack, 2008).

There were also two different ways that gamblers envisioned their future. The first way to describe their future was overwhelmingly positive. Specifically, people wrote optimistically about their possible future without problematic gambling, emphasizing that they will have a better financial situation and, as a result, will be able to engage in more meaningful activities and ultimately be happier. They also reported that this optimistic future is vivid in their mind. These findings are in line with prior research suggesting that optimism is associated with the ability to generate vivid mental imagery of positive future events (Blackwell et al., 2013; Ji et al., 2017). The second way that gamblers described their future was with ambivalence. Although participants were asked to envision a life when their gambling was no longer problematic, the hardships described in participants' narratives were often centered on the process of quitting

gambling or the uncertainty associated with what life may look like without gambling. Indeed, gamblers with ambivalence about their future reported that this future is vague in their mind. This may be due to the skewed temporal orientation commonly reported by disordered gamblers (Toneatto, 1999) in which their shorter time horizons prevent them from predicting events far into their future (Hodgins and Engel, 2002).

Importantly, the results of this numerically aided phenomenological study also suggest that each temporal orientation may be a source of motivation for self-directed change, but only when that temporal orientation is perceived to be positive. For example, gamblers with a positive past reported that they longed to return to this favorable time in their life. As a result, gamblers reported both a greater readiness and desire to change their gambling behavior than did gamblers with a difficult past. In line with gamblers' experiential narratives, prior research has established the motivating properties of discontinuity-induced nostalgia (Kim and Wohl, 2015; Salmon et al., 2018; Wohl et al., 2018). Specifically, nostalgic reverie for the pre-addicted self heightens the extent to which people are ready for change (Kim and Wohl, 2015), in addition to increasing the likelihood that people will make an attempt to quit or cut down on an addictive behavior (i.e., gambling and drinking) over time (Salmon et al., 2018; Wohl et al., 2018). Therefore, a past focus that elicits nostalgia may have the greatest behavior change utility among gamblers who have a positive past they desire to reclaim.

Similarly, gamblers who anticipated a positive future also reported that they long for a future in which they are free from gambling problems, and reported a greater desire to change their gambling behavior than did gamblers who were ambivalent toward their future. However, there were no differences between clusters on the extent to which gamblers were ready to change their behavior. Importantly, gamblers who felt optimistic about their future without gambling also reported that this future is very vivid in their mind. As such, these gamblers may be able to use these vivid fantasies about their desired future to create a commitment to the goal of changing their gambling behavior (Oettingen et al., 2001). This mental contrasting of the desired future and current reality may lead people to take action to change their behavior (Oettingen, 2000). Moreover, having a positive outlook toward the future is predictive of motivation to attain a specific goal (i.e., self-directed change), though this may only be true for those who view changing their behavior as being instrumental to achieving their desired future (Van Calster et al., 1987). Therefore, a future focus that elicits vivid thoughts about a desired future may have the greatest behavior change utility among gamblers who are optimistic about the future they want to attain.

On the other hand, it is unlikely that a specific temporal orientation will facilitate self-directed change when that temporal orientation is perceived to have negative elements. For example, gamblers who described a difficult past before gambling reported fewer positive emotions associated with their lived past than did gamblers with a positive past. Moreover, these gamblers expressed an unwillingness to stop gambling, citing various reasons for continued play (e.g., the excitement). Gambling is often used as a maladaptive coping method to distract oneself from having to deal with the problems in their life (Gupta et al., 2004; Nower et al., 2004). In addition, gambling can also fill a void in one's life, typically through alleviating boredom (Wood and Griffiths, 2007). Given that gambling may offer an escape to those with a difficult past, gamblers may not readily rely on a past focus when attempting to change their behavior. Rather, such gamblers may be more apt to draw on the promise of a brighter future focus, as gamblers can make a new life for themselves free from their past adversities.

In a like manner, gamblers who are ambivalent (i.e., they anticipate both positive and negative elements) toward their future reported that their future is vague and anticipated fewer positive emotions associated with this future than did gamblers who were optimistic. These gamblers also expressed a resistance toward changing their behavior, which may stem from the conflict between their readiness to change (i.e., acknowledging that change is in their best interest) and their desire for change. Indeed, resistance is often met with a reduced desire for change (Markland et al., 2005). Ambivalence may also be due to the fact that gamblers reported that they have difficulties envisioning a future beyond the process of quitting. Having a shortened time horizon makes the future difficult to plan for Hodgins and Engel (2002), as imagined futures often lack detail and contextual information (Noël et al., 2017). Among those who have difficulty imagining a future beyond the difficulties associated with changing their gambling behavior, a future focus is not likely to facilitate self-directed change. Instead, a past focus may serve as a vivid reminder of what life was like before their gambling became problematic and offer a clear image of what can be reclaimed through behavior change.

Indeed, the results of the current study suggest that gamblers may be less likely to draw on a specific temporal dimension as a source of behavioral motivation if such a period in time is not perceived to be positive. Yet to be explored is whether manipulating temporal focus may influence motivation to change among those with a difficult past or who feel ambivalent toward their future. For example, it is possible that gamblers with a difficult past may still reap the benefits of nostalgic reflection, but only when prompted to wax nostalgic about a time before the addictive behavior when they felt safe and secure. This may be accomplished by reminding the person living with addiction that nostalgia is a common human emotion experienced by everyone at some point in life (see Wildschut et al., 2006), that addictive behavior tends to ebb and flow, and thus to focus on a time when the addictive behavior was absent or not problematic. Similarly, gamblers who are ambivalent toward the future may also benefit from instructions that guide them toward generating vivid future imagery about what life will be like when their gambling problems are absent. Despite the difficulties many gamblers experience envisioning a future without gambling, being guided through the process of creating vivid possible future selves may motivate them to attain this desired future. Future research is encouraged to examine this possibility.

The results of the current study offer preliminary insight into the meaning that problem gamblers give to their lived past experiences before their gambling became problematic, as well as

their imagined futures when their gambling will no longer be problematic. These insights are tentative due to the small sample size, however, findings do align with the extant literature on the behavior change utility of nostalgia as well as the literature on the desire for a better possible future as motivation for behavior change. As such, we have some confidence that our findings have basic and applied significance for understanding how to motivate behavior change among people living with addiction. Specifically, nostalgia appears to be an important factor in readying oneself for change when there is a readily accessible positive past to draw upon. From an applied perspective, treatment providers are encouraged to discuss with their clients how they perceive their lived past and anticipated future without gambling and use positive anchors (e.g., the quality of their character, relationships, or activities) in each temporal dimension to facilitate change. When one's life before gambling is filled with distress, clients can be directed toward creating a more vivid future for themselves in which they will no longer gamble.

This study has a couple limitations that should be noted. First, due to the qualitative nature of this study, the sample size is quite small. Although the sample sizes were deemed appropriate for the numerically aided phenomenological assessment, the quantitative results reported should be interpreted with caution. The low sample size also prevents direct comparisons from being made between conditions on various outcome measures, such as the extent to which each temporal dimension is vivid in their mind. Rather, these comparisons are intended to be descriptive and provide further insight into the nature of each cluster. To be able to draw such conclusions, future research would do well to replicate and extend the outcomes associated with each temporal focus with sufficiently powered samples. Second, participants were assigned to either respond to writing prompts and follow-up items about their past before gambling or their future without gambling. Future research is encouraged to address this limitation by assessing participants' natural dispositions to their past before gambling became problematic and their anticipated future without problematic gambling, as well as having participants complete full-scale measures of the outcomes of interest (e.g., longing for the past and future). Assessing gamblers' natural temporal dispositions will also allow for the possibility that some people may be focused on both the past and future, while others may be focused on neither. Doing so would also provide a better understanding of how each temporal focus is associated with motivation to change addictive behavior, as well as their relative behavior change utility.

Although addiction is difficult to overcome, some people are motivated to take action to change their behavior. Longing for one's life before the addictive behavior took hold or longing for a future when the addictive behavior will no longer be problematic is one such source of motivation. Importantly, using a numerically aided phenomenological approach, we demonstrated that the motivating properties of reflecting on the past and future are more pronounced when one's life, character, relationships, and activities before gambling are perceived to be positive or when one's future emotions, finances, and activities without gambling are expected to be positive. People engaging in addictive behaviors are encouraged to draw upon fond memories from the past as well as optimistic expectations for the future when gathering motivation to take action to change addictive behavior.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Carleton University Research Ethics Board-B (CUREB-B). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

MS and MW worked together in the conception and design of this work. MS collected and analyzed the data, as well as drafting and revising the manuscript. MW provided substantial revisions to the manuscript. Both authors reviewed and approved the final version to be published.

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BRIEF RESEARCH REPORT
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The Negative Interactive Effects of Nostalgia and Loneliness on Affect in Daily Life

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Research has suggested that nostalgia is a mixed, albeit predominantly positive emotion. One proposed function of nostalgia is to attenuate the negative consequences of loneliness. This restorative effect of nostalgia, however, has been demonstrated with cross sectional and experimental methods that lack ecological validity. In studies that have measured nostalgia in daily life, however, nostalgia has been negatively related to well-being. We propose an alternative theory that posits that the effect of nostalgia on well-being depends on the event or experience that elicits nostalgia. We tested this theory by measuring daily states of nostalgia, loneliness, and affect across five daily diary studies (*N* = 504; 6,004 daily reports) that lasted for 14 days. Using multilevel modeling, we found that nostalgia and loneliness were negatively related to positive affect and positively related to negative affect. The negative effects of nostalgia on affective well-being were significantly stronger on days when people felt more lonely as opposed to less lonely. Viewed alternatively, the negative effects of loneliness on affective well-being were stronger on days when people felt more vs. less nostalgic. Thus, in contrast to experimental findings, nostalgia did not attenuate, but rather exaggerated the negative effects of loneliness on affective well-being. These findings support a theoretical account that proposes that the effect of nostalgia on well-being depends on the natural context in which nostalgia is elicited.

Keywords: nostalgia, loneliness, affect, well-being, diary

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INTRODUCTION

"There is no greater sorrow than to recall a happy time when miserable."
– Dante Alighieri (Inferno, Canto V)

Nostalgia has been defined as a sentimental longing for the past. Poets, novelists, and screenwriters have frequently incorporated this mixed emotion throughout storylines and plots for many years, but a scientific understanding of the nature of nostalgia has only begun to emerge in the past few decades (e.g., Batcho, 2013; Sedikides et al., 2015). This growing body of research has shown that many different situations and settings can trigger feelings of nostalgia, such as adverse weather (van Tilburg et al., 2018), social exclusion (Seehusen et al., 2013), loneliness (Zhou et al., 2008), boredom (van Tilburg et al., 2013), and music (Barrett et al., 2010). Many, although not all, of the triggers of nostalgia are negative experiences.

Although many triggers of nostalgia tend to be negative in nature, the effect of nostalgia on subsequent well-being states appears to be quite positive. For instance, several experiments have shown that nostalgia increases meaning in life, positive affect, self-esteem, and optimism

(Wildschut et al., 2006; Routledge et al., 2011; Cheung et al., 2013). In other studies, nostalgia serves a restorative or palliative function by attenuating the negative effects of negative experiences (Sedikides et al., 2015). For example, certain nostalgic feelings can counteract the detrimental effects of meaninglessness (Routledge et al., 2011), they can reduce the deleterious effects of induced self-threat (Vess et al., 2012), and they can increase perceptions of social support following induced loneliness (Zhou et al., 2008). Although a few exceptions to these positive effects of nostalgia have been documented (e.g., Iyer and Jetten, 2011; Verplanken, 2012), the overwhelming number of documented positive effects has led some researchers to conclude that "nostalgia is considered an emotion, and a predominantly positive one at that" (Sedikides et al., 2015).

Methodological Considerations

When evaluating the functions of nostalgia and its potential benefits on well-being, it is important to consider the methods that have demonstrated these effects. Many of the studies cited above have manipulated nostalgia via the Event Reflection Task, a paradigm that asks participants to write about their *most* nostalgic experience (italics added for emphasis, (Wildschut et al., 2006). Although informative in understanding people's most nostalgic experience, these manipulations do not capture typical nostalgic feelings that might occur in daily life. It is worth emphasizing that nostalgic feelings that are brought to mind via experimental manipulation are likely quite different from naturally occurring states of nostalgia that are elicited by negative experiences. Hence, experimentally induced nostalgic states likely possess experimental realism, but they lack mundane and psychological realism (Aronson and Carlsmith, 1968; Aronson et al., 1998). Moreover, asking participants to reflect on their most nostalgic experience at one time requires participants to rely on extensive recall, which are often are fraught with biases and heuristics (Bradburn et al., 1987; Schwarz, 2012).

One way of addressing biases inherent in extensive recall tasks is to ask participants about their experiences in daily life in real time or close to real time through the use of daily diary (Bolger et al., 2003) or Ecological Momentary Assessment methods (Shiffman et al., 2008). The goal of daily life methods is to capture a random sample of time points from someone's life through repeated administration of questions in naturalistic contexts (Newman and Stone, 2019). Studies that have measured fluctuating states of nostalgia in daily life have found that nostalgia looks much more negative than the depiction portrayed by experimental studies (Newman et al., 2020a). Daily and momentary states of nostalgia were negatively related to well-being, and these negative relationships remained after controlling for the effects of negative experiences on well-being. Lagged analyses from one day to the next showed that nostalgia predicted increases in rumination and sadness and decreases in feelings of peacefulness and calm (Newman et al., 2020a, Study 3).

In an attempt to reconcile the differences between the negative relationships between nostalgia and well-being in daily life, Newman et al. (2020a) asked participants to write about their most nostalgic experience (following the instructions of the Event Reflection Task) at one time and to write about their daily nostalgic feelings each day for one week. If they did not feel nostalgic on a particular day, they were asked to write about an ordinary experience. After each writing exercise, participants rated how positive and how negative each experience was. They found that people's most nostalgic experiences were more positive and less negative than their daily nostalgic feelings (Study 5). In fact, daily nostalgic feelings were similar in valence to ordinary, non-nostalgic experiences in daily life. The conclusion from these studies was that the deliberate engagement in the recollection of extremely nostalgic moments may improve well-being, but involuntarily experiencing nostalgia elicited by situational cues may not feel particularly good.

An Alternative Perspective

The findings from studies that have measured nostalgia in daily life provide a framework to understand nostalgia in ecologically valid contexts. This has led to a theoretical perspective that incorporates the nature of the daily situations and experiences that elicit feelings of nostalgia and their downstream consequences. According to this theory, the valence of the nostalgia-eliciting event will influence the valence of the nostalgic feeling. As demonstrated by Newman et al. (Study 5), some feelings of nostalgia were considerably more positive than others. In other words, some nostalgic feelings are very sweet with just a slight tinge of bitterness, whereas other nostalgic feelings are very bitter with just a tinge of sweetness. A positive event, such as spending time with childhood friends, will elicit more highly positively-valenced nostalgic feelings, whereas negative experiences, such as social isolation, will elicit more negatively-valenced nostalgic feelings.

Subsequently, the valence of the nostalgic feeling will influence well-being. Nostalgic feelings that are more positively-valenced will lead to an increase in well-being, whereas nostalgic feelings that are more negatively-valenced will lead to a decrease in well-being. The theory makes the assumption that the nostalgic memory is used to form a representation of the target judgment (e.g., how my life is currently going), resulting in an assimilation (Bless and Schwarz, 2010)[1]. This theory predicts that nostalgia will exaggerate (as opposed to buffer) the effect of the nostalgia-eliciting experience on well-being.

Present Research

The present research considered the interaction effect of loneliness and nostalgia on affective well-being. Nostalgia has been shown to buffer the negative effects of loneliness (Zhou et al., 2008), but these studies relied on cross-sectional data that do not capture within-person variation in daily life and experiments which lack ecological validity. The present studies addressed these limitations by measuring daily states of nostalgia in several daily diary studies. We hypothesize that the negative effects of nostalgia on affective well-being will be amplified on days when people feel lonely. Because feelings of loneliness

[1]It is possible for a nostalgic reflection to result in a contrast effect if the information brought to mind is used to form a representation of the standard (i.e., how my life was in the past) against which the target is compared (i.e., how my life is currently). In this manuscript, we consider assimilation effects only for simplicity.

should lead to nostalgic feelings that are more negative than positive, these nostalgic experiences should consequently have a negative influence on affective well-being. This prediction contrasts with those derived from experimental studies that suggest that nostalgia can buffer or attenuate the negative effects of loneliness.

METHODS

Participants and Procedure

Participants were undergraduate students at a large university who received research credit in exchange for their participation. After signing up for the study, they either watched a short instructional video or participated in a video chat with one of the researchers to learn about the procedure. Over the course of two weeks, the participants received an email each evening at 9:00 pm with a link to a questionnaire. They were instructed to complete the questionnaire at the end of their day just before going to bed. A reminder email was sent on the following morning at 7:00 am and responses were accepted until 10:00 am.

Daily reports were removed from final analyses if they were completed after 10:00 am, if they were completed in less than 2 or 3 min (depending on the number of questions asked in each sample), if multiple entries were completed on the same day, or if an instructed response item (e.g., "Please select 'occurred and not important' for this question," as recommended by Meade and Craig, 2012) was answered incorrectly. Additionally, participants who completed less than five valid daily responses were removed. In total, participants completed 6,541 daily reports. After data cleaning, we analyzed 6,016 daily reports (91.97%) from a total of 504 participants (M_{age} = 20.10; *SD* = 1.89; 78.2% female). On average, participants completed 11.94 daily reports (*SD* = 2.18, median = 13) indicating good compliance (see Nezlek, 2012, for a discussion of typical compliance rates in daily diary studies).

Data from five different diary studies were compiled because their procedures and measures were similar. Some of the results we report here are secondary analyses from published data that was used for different purposes than the present paper (Newman et al., 2020b).

Measures

Nostalgia was measured with the 4-item Personal Inventory of Nostalgic Experiences (PINE) scale (Newman et al., 2020a). This scale has been validated in previous research and has demonstrated better psychometric properties than the commonly used Southampton Nostalgia Scale (SNS; Routledge et al., 2008; Barrett et al., 2010). As is common practice in daily diary studies, the items were reworded slightly to be appropriate for daily administration. An example of one of the items is "How nostalgic did you feel today?" Responses were recorded on a 7-point scale (1 = *not at all*, 7 = *very much*).

Loneliness and affect were measured in a similar manner. Affect was conceptualized using the affective circumplex model which distinguishes valence and arousal (Barrett and Russell, 1998). We used five adjectives to measure each quadrant of the circumplex. Positive activated (PA) affect was measured with happy, excited, enthusiastic, delighted, and glad; positive deactivated (PD) affect was measured with calm, peaceful, relaxed, at ease, and contented; negative activated (NA) affect was measured with stressed, tense, nervous, angry, and annoyed; and negative deactivated (ND) affect was measured with sad, gloomy, miserable, depressed, and disappointed. Following similar methods used by Jonason et al. (2008) and Doane and Adam (2010), we measured loneliness with the items alone and lonely. For each loneliness and affect adjective, participants were asked to report how strongly they felt each one today. Responses were recorded on a 7 point scale (1 = *did not feel this way at all*, 4 = *felt this way moderately*, 7 = *felt this way very strongly*).

RESULTS

Descriptive Statistics

Because the data were hierarchical in nature, multilevel modeling was used for all analyses. The five studies presumably represented a sample of time points from the larger hypothetical population of all times; we therefore conceptualized the structure as a three-level model in which days were nested within persons, and persons were nested within study. We used the program HLM 7 (Raudenbush et al., 2011) and present unstandardized coefficients.

To provide estimates of the means and variances of each measure, we conducted unconditional models in which no predictors were entered at any level. These models indicated that there was more within-person variance than between-person variance for each variable (see **Table 1**). There was very little between-study variance. Reliabilities were calculated in a manner described by Nezlek (2017), and each construct was measured reliably.

Primary Analyses

First, we examined the within-person relationships between nostalgia and affective states. In separate models, affect was entered as the outcome variable and nostalgia was entered as the sole level-1 predictor, centered around each individual's mean as follows:

$$\text{Day level: } y_{ijk}(\text{affect}) = \pi_{0jk} + \pi_{1jk}(\text{nostalgia}) + e_{ijk}$$

$$\text{Person level: } \pi_{0jk} = \beta_{00k} + r_{0jk}$$

$$\pi_{1jk} = \beta_{10k} + r_{1jk}$$

$$\text{Study level: } \beta_{00k} = \gamma_{000} + u_{00k}$$

$$\beta_{10k} = \gamma_{100} + u_{10k}$$

Error terms were trimmed if their *p*-values exceeded 0.15 as recommended by Nezlek (2012)[2]. These models showed that nostalgia was negatively related to PA, $b = -0.03$, $t = 2.24$, $p = 0.025$, and PD, $b = -0.05$, $t = 3.34$, $p < 0.001$, and was positively related to NA, $b = 0.13$, $t = 11.70$, $p < 0.001$, and ND, $b = 0.19$, $t = 7.17$, $p < 0.001$. Consistent with the findings by

[2]In a few of the models, error terms at level 3 did not reach this level of significance, so we were more lenient to allow these models to converge with at least one random effect at this level.

TABLE 1 | Descriptive statistics.

		Variance			
Variable	**Mean**	**Within-person**	**Between-person**	**Between-study**	**Reliability**
Nostalgia	2.67	1.62	1.43	0.02	0.90
Loneliness	2.27	1.32	1.21	0.00	0.82
Positive activated affect	3.74	1.31	1.10	0.00	0.84
Positive deactivated affect	3.59	1.10	0.95	0.00	0.83
Negative activated affect	3.05	1.17	0.74	0.00	0.63
Negative deactivated affect	2.31	1.09	0.84	0.01	0.80

Newman et al. (2020a), nostalgia was negatively related to daily affective well-being.

Next, we examined the within-person relationships between loneliness and affective states and nostalgia in a similar manner. Loneliness was negatively related to PA, $b = -0.22$, $t = 12.73$, $p < 0.001$, and PD, $b = -0.18$, $t = 11.61$, $p < 0.001$, and was positively related to NA, $b = 0.29$, $t = 23.62$, $p < 0.001$, and ND, $b = 0.50$, $t = 49.24$, $p < 0.001$. Loneliness was positively related to nostalgia, $b = 18$, $t = 39.15$, $p < 0.001$. In sum, loneliness and nostalgia were negatively related to affective well-being.

Critical to the main hypothesis, we examined whether the negative effects of nostalgia on affect were moderated by daily states of loneliness. To do so, we group-mean centered (i.e., centered around each individual's mean) nostalgia and loneliness and multiplied these variables together to create an interaction term at level 1. In separate models, affective states were entered as the outcome measures, nostalgia and loneliness were group-mean centered, and the interaction term was entered uncentered at level 1. No predictors were added at levels 2 or 3.

$$\text{Day level:} \quad y_{ijk}\,(\text{affect}) = \pi_{0jk} + \pi_{1jk}\,(\text{loneliness}) + \pi_{2jk}\,(\text{nostalgia}) + \pi_{3jk}\,(\text{interaction}) + e_{ijk}$$

These models indicated that the within-person relationships between nostalgia and affective states were moderated by daily states of loneliness (see **Table 2**). To understand the nature of these interactions, we calculated estimates of the affective states on days that were one standard deviation above and below the mean for nostalgia and loneliness. As described by Nezlek (2011), the standard deviations were taken from unconditional models for each respective variable. These estimates are provided in the top portion of **Table 3**. The effect of nostalgia on PA and PD was slightly positive on days (i.e., PA and PD increased) when people felt lower levels of loneliness, and the effect of nostalgia on PA and PD was slightly negative (i.e., PA and PD decreased) on days when people felt higher levels of loneliness. The positive effects of nostalgia on NA and ND (i.e., NA and ND increased) were stronger on days that were high in perceived loneliness. In sum, the negative effects of nostalgia on affective well-being were stronger on days when people felt quite lonely vs. less lonely.

These effects could also be interpreted in terms of the moderation of daily states of nostalgia on the within-person relationships between loneliness and affective well-being (see the bottom of **Table 3**). Framed in this manner, loneliness was more strongly negatively related to PA and PD and was more strongly positively related to NA and ND on days when people felt more nostalgic than on days when they felt less nostalgic. For example, consider the interaction effect involving ND. On days low in nostalgia, the effect of loneliness on ND was 0.91. On days high in nostalgia, the effect was 1.10. Thus, nostalgia exaggerated or amplified the negative effects of loneliness on affective well-being.

Suppression Analyses

The analyses described above examined the interaction effects of nostalgia and loneliness on affective well-being states. In previous research, the buffering effect of nostalgia has been tested through inconsistent mediation, also known as statistical suppression (MacKinnon et al., 2000; Zhou et al., 2008). In these models, the negative effects of loneliness have been suppressed by nostalgia. For example, after adding nostalgia as a predictor in a model, Zhou et al. (2008) found that the negative relationship between loneliness and perceived social support was strengthened in magnitude, i.e., became more negative.

We aimed to examine the possibility that the negative effects of loneliness on well-being would be suppressed by daily states of nostalgia. To do so, we created three models. The first model examined the effect of loneliness on affective well-being (i.e., the total effect). The second model examined the effect of loneliness on nostalgia (i.e., the a-path), and the third model included loneliness and nostalgia as predictors of affective well-being, which examines the b-path and the direct effect. We calculated the within-person indirect effect from a multilevel structural equation model using the program MPlus Version 8.4 (Muthén and Muthén, 1998–2017) (see Preacher et al., 2010, for a description)[3].

These models showed that the within-person indirect effects were significant or marginally significant for PD, NA, and ND (see **Table 4**). Contrary to findings from previous research, the effects of loneliness on affective well-being did not become stronger after including nostalgia as a mediator. That is, nostalgia did not buffer against the negative effects of loneliness on affective well-being. Rather, nostalgia served as a mediator

[3]Due to complexities of testing mediation/suppression in three-level models, we opted instead to run these models using two-level models with days nested within-persons (Preacher, 2011).

TABLE 2 | Parameter estimates of all variables in interaction models.

	Loneliness coefficient			Nostalgia coefficient			Interaction coefficient		
DV	***b***	***t***	***p***	***b***	***t***	***p***	***b***	***t***	***p***
PA	−0.21	29.24	<0.001	0.03	1.52	0.202	−0.03	2.97	0.003
PD	−0.17	20.11	<0.001	−0.01	0.80	0.423	−0.03	2.50	0.012
NA	0.27	14.10	<0.001	0.07	4.18	0.014	0.02	3.92	<0.001
ND	0.44	24.66	<0.001	0.10	4.32	0.012	0.03	7.03	<0.001

DV, dependent variable; PA, positive activated affect; PD, positive deactivated affect; NA, negative activated affect; ND, negative deactivated affect.

TABLE 3 | Estimates of affect at one standard deviation above and below means of nostalgia and loneliness in interaction models.

Interpretation: The Effect of Nostalgia on Well-Being is Moderated by Loneliness						
	Low Loneliness (-1 *SD*)			**High Loneliness (+ 1 *SD*)**		
DV	**-1 *SD* Nostalgia**	**+ 1 *SD* Nostalgia**	**High vs. Low Nostalgia**	**-1 *SD* Nostalgia**	**+ 1 *SD* Nostalgia**	**High vs. Low Nostalgia**
PA	3.91	4.06	0.15	3.50	3.49	−0.01
PD	3.76	3.81	0.05	3.45	3.35	−0.10
NA	2.68	2.82	0.14	3.23	3.47	0.24
ND	1.71	1.89	0.18	2.62	2.99	0.37
Interpretation: The Effect of Loneliness on Well-Being is Moderated by Nostalgia						
	Low Nostalgia (-1 *SD*)			**High Nostalgia (+ 1 *SD*)**		
DV	**-1 *SD* Loneliness**	**+ 1 *SD* Loneliness**	**High vs. Low Loneliness**	**-1 *SD* Loneliness**	**+ 1 *SD* Loneliness**	**High vs. Low Loneliness**
PA	3.91	3.50	−0.41	4.06	3.49	−0.57
PD	3.76	3.45	−0.31	3.81	3.35	−0.46
NA	2.68	3.23	0.55	2.82	3.47	0.66
ND	1.71	2.62	0.91	1.89	2.99	1.10

DV, dependent variable; PA, positive activated affect; PD, positive deactivated affect; NA, negative activated affect; ND, negative deactivated affect.

and helped explain why loneliness was negatively related to affective well-being. These findings are consistent with the moderation analyses described above that paint nostalgia in a more negative light.

DISCUSSION

Across five daily diary studies, feelings of nostalgia varied considerably from one day to the next. Replicating previous findings at a within-person level of analysis, daily feelings of nostalgia were negatively related to affective well-being. The present findings advance our understanding of these within-person relationships by showing that the negative effects of nostalgia on affective well-being were stronger on days when people felt higher levels of loneliness than on days when they felt lower levels of loneliness. These findings are consistent with the notion that nostalgic feelings may be influenced by various contextual factors that vary from one day to the next. When the nostalgia-eliciting event or experience is a negative one (e.g., feeling lonely), the nostalgic feeling will be tinged with more sadness than it otherwise would be if the nostalgia-eliciting event were a more positive one (e.g., socializing with close friends). The valence of the nostalgic feeling will subsequently influence well-being states.

We also found no evidence that nostalgia attenuates or buffers the negative effects of loneliness on affective well-being states. That is, the negative effects of loneliness on affect were not suppressed by daily nostalgic feelings. Rather, nostalgia actually mediated these relationships. The effects of loneliness on affect were reduced in magnitude after entering nostalgia as a mediator. Thus, the reason people do not feel well when they feel lonely can be attributed in part to feelings of nostalgia.

Reemphasis of Methodological and Conceptual Considerations

These findings add to a small but growing body of research that shows that nostalgia experienced in daily life does not look quite as rosy as the view of nostalgia proposed from experimental and cross-sectional studies. For example, in a recent experience sampling study of employees, momentary states of nostalgia were not significantly related to momentary states of positive affect (van Dijke et al., 2019). Our findings also dovetail nicely with those reported by Muise et al. (2020) who measured daily states of sexual nostalgia, defined as reflections of positive sexual experiences with former romantic partners. They found that people were more likely to engage in sexual nostalgic thoughts on days when they were less satisfied with their current romantic relationship and that individual differences in sexual

TABLE 4 | Parameter estimates from mediation models.

	a-path			b-path			Total effect (c)			Direct effect (c')			Indirect effect		
DV	***b***	***t***	***p***	***b***	***t***	***p***	***b***	***t***	***p***	***b***	***t***	***p***	***b***	***95% CI***	***p***
PA	0.22	10.90	<0.001	0.02	1.61	0.107	−0.22	12.73	<0.001	−0.22	12.68	<0.001	−0.01	[−0.02, 0.00]	0.127
PD	0.22	10.90	<0.001	−0.01	0.98	0.328	−0.18	11.61	<0.001	−0.17	11.24	<0.001	−0.01	[−0.02, 0.00]	0.058
NA	0.22	10.90	<0.001	0.08	5.44	<0.001	0.29	17.63	<0.001	0.27	16.34	<0.001	0.02	[0.01, 0.03]	0.001
ND	0.22	10.90	<0.001	0.11	8.11	<0.001	0.48	29.23	<0.001	0.45	28.06	<0.001	0.03	[0.02, 0.04]	<0.001

The a-path refers to the effect of loneliness on nostalgia; the b-path refers to the effect of nostalgia on affect; the total effect refers to the effect of loneliness on affect without controlling for nostalgia; the direct effect refers to the effect of loneliness on affect after controlling for nostalgia; the indirect effect refers to the effect of loneliness on affect via nostalgia.

nostalgia, measured as an aggregation of daily states of sexual nostalgia, were negatively related to sexual and relationship satisfaction 3 months later.

When considering the discrepancies between the experimental findings that posit that nostalgia is a "predominantly positive emotion" (Sedikides et al., 2015) and daily life methods that suggest that nostalgia is negatively related to well-being (Newman et al., 2020a), it is important to remember that different methods address different questions and have unique strengths and weaknesses. Stated more pessimistically, "all research strategies and methods are seriously flawed" (McGrath, 1982, p. 70). Experimental studies can address causal effects that may exist, but they lack ecological validity and do not provide any information about how frequently nostalgia occurs or how it relates to other variables in daily life. Daily life methods address these limitations quite well, but they obviously cannot make firm causal claims because nostalgic states are measured rather than manipulated.

Additionally, many experiments have used between-subject designs, whereas our studies examined within-person processes. These unique levels of analysis are mathematically orthogonal (Nezlek, 2001) and may represent distinct psychological processes (Affleck et al., 1999). Moreover, several studies that have found support for the buffering effect of nostalgia have measured nostalgia with the Southampton Nostalgia Scale (e.g., Zhou et al., 2008; Juhl et al., 2010), which combines nostalgia proneness with valuing nostalgia. We measured nostalgia in daily life with the Personal Inventory of Nostalgic Experiences (PINE) scale, a scale that reliably captures nostalgic feelings. Previous research has shown that the PINE scale is more negatively related to well-being than the SNS (Newman et al., 2020a, Study 2).

In addition to these methodological differences, it is important to highlight a conceptual similarity between our studies and prior experimental research. Similar to prior research, we define nostalgia as a sentimental longing for the past. People's recall of their most nostalgic feeling and daily nostalgic feelings are all instances of nostalgia. Thus, nostalgia measured in daily life is not an entirely new construct from the one that is captured in experiments. They simply differ in their prototypicality and in how they are elicited.

Qualifications and Future Research

With these methodological differences in mind, it is important to qualify some of our results and distinguish what we can state with empirical conviction from what we surmise. Because daily states of all variables were assessed at one time at the end of each day, we do not know the exact sequence of the temporal states that occurred within each day. Additionally, we cannot make firm causal statements due to potential third variable confounds. It is possible that loneliness and affect interact to influence nostalgia, namely that people would be most likely to feel nostalgic when they feel lonely and sad. This possibility seems unlikely, however, given that lagged analyses from one day to the next showed that nostalgia actually increased NA and ND and decreased PD on the following day. Nevertheless, future research is needed to examine the specific sequence of feelings and states that occur within a day.

It is also important to stress that our findings demonstrate what typically happens in daily life. It is possible that nostalgia

may attenuate the negative effects of loneliness and other negative experiences in certain situations. For instance, consider a situation in which loneliness increases nostalgia and thereby leads one to view pictures of old friends on social media. If that particular act causes one to talk with the old friends, that would certainly help buffer against the initial negative effects of feeling lonely. Our findings from daily diaries, however, showed that this hypothetical example likely does not occur very frequently.

Our outcome measures were affective well-being states, and we should be cautious in generalizing our findings beyond affective well-being. Many of the experimental studies have used a range of outcome measures, including vitality (Routledge et al., 2011), organizational citizenship behavior (van Dijke et al., 2015), and collective guilt (Baldwin et al., 2018). Future research is needed to examine differences between the effect of daily nostalgic feelings and experimentally induced nostalgia on these outcomes.

CONCLUSION

In contrast to previous research that has relied on experimental manipulations and cross-sectional designs, we found that nostalgia did not buffer against the negative effects of loneliness. Instead, using daily diary methods to measure natural fluctuations of nostalgia, we found that the negative effects of nostalgia were amplified on days when people felt lonely. Moreover, the negative effect of loneliness on affective well-being states were not attenuated by nostalgia, but rather, were mediated or explained by daily nostalgic feelings. Although the deliberate engagement in atypically positive nostalgic experiences induced via experimental manipulation may lead to beneficial effects, ordinary nostalgic feelings experienced in the natural contexts of daily life appear to be less beneficial.

DATA AVAILABILITY STATEMENT

The data are stored at osf.io/dtw5m and are available by request from the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Institutional Review Board University of Southern California. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

DN and MS discussed the theory and hypotheses, contributed to manuscript revisions, and read and approved the submitted version. DN collected, organized, analyzed the data, and wrote the first draft of the manuscript. Both authors contributed to the article and approved the submitted version.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2020.02185/full#supplementary-material

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BRIEF RESEARCH REPORT
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Eye of the Beholder: Memory Recall Perspective Impacts Nostalgia's Influence on Positive Affect

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Recalling memories for which one is nostalgic provides a host of psychological benefits, including promoting positive affect. The present research ($N = 409$) examined how memory recall perspective impacts this affective consequence of waxing nostalgic. Memory recall perspective research indicates that people show stronger affective engagement with memories recalled from a first person perspective (seeing the event through one's own eyes, as one experienced it) rather than a third person perspective (seeing the event as an outside observer may have). Results indicated that when participants recalled memories from a first person perspective, those who recalled an event for which they felt nostalgic reported higher positive affect compared to their counterparts who recalled an ordinary past event. However, when participants recalled memories from a third person perspective, those who recalled an event for which they felt nostalgic reported levels of positive affect that did not differ from participants who recalled an ordinary past event. This finding suggests that, when comparing nostalgic reverie to recalling an ordinary past event, the extent to which nostalgia serves as a well-spring of positive affect is partially impacted by memory recall perspective.

Keywords: nostalgia, memory, recall, perspective, positive, affect

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Nostalgia, defined as a sentimental longing for the past, is a common emotion that serves a host of psychological functions (Routledge et al., 2013). Specifically, nostalgia boosts positive affect, increases positive self-regard, fosters feelings of social connectedness, and serves as a reservoir of meaning. Nostalgic recollections typically include the self as the central character within a meaningful social context and contain more positive rather than negative affective content (Wildschut et al., 2006). Although recent research has illuminated much about the consequences and content of nostalgic reflection, research has yet to examine the relationship between nostalgia and memory recall perspective. Memories can be recalled from first or third person perspectives (Nigro and Neisser, 1983). When engaging in first person perspective recall, individuals recall the memory from their original point of view, whereas individuals engaging in third person perspective recall see themselves in the memory, not from their original point of view, but how an observer might view the event. Autobiographical memory research suggests that the visual perspective from which memories are recalled has important consequences for how memories are experienced (Sutin and Robins, 2008).

The present research provides insight into the relationship between memory recall perspective and the positive affective consequences of nostalgic reverie.

NOSTALGIA

Research suggests common elements within nostalgic narratives. Wildschut et al. (2006) instructed participants to write about an event for which they felt nostalgic. Content analyses revealed that although these narratives contained aspects of both positively and negatively valanced emotions, the frequency of positive emotions was three times that of negative emotions. Additionally, nostalgic narratives overwhelmingly took on a redemptive rather than contaminating quality. That is, rarely did events turn from positive to negative, but much more often were described as shifting from negative beginnings to positive endings. Further analyses revealed that nostalgic narratives typically feature the self as the central character situated within a social context populated by significant others (e.g., family and friends). Moreover, events commemorating symbolically meaningful cultural ritual or tradition (e.g., holidays, birthdays, and graduations) are likely to be the focus of nostalgia. In sum, content analyses reveal that nostalgic narratives are predominantly positive, redemptive, self-focused, and situated in a broader context of significant others and meaningful life events.

Research has also shown that nostalgia serves a variety of vital psychological functions (Wildschut et al., 2006; Routledge et al., 2013). Nostalgia increases positive self-regard. Experiencing nostalgia, compared to control conditions, increased the accessibility of positive self-attributes and attenuated the propensity to engage in self-serving attributions following failure (Vess et al., 2012). Also, nostalgia strengthens feelings of social connectedness. Compared to control participants, nostalgic participants indicated that they felt more socially supported, loved, and protected (Zhou et al., 2008). Additional research demonstrates that individuals low (compared to high) in attachment-related avoidance (the extent to which individuals are concerned with closeness in relationships) derived more social connectedness from nostalgia and perceived a greater capacity to provide emotional support to others (Wildschut et al., 2010). Furthermore, nostalgia serves as a source of meaning. Compared to participants who thought about a positive recent past event or a positive future event, those who engaged in nostalgia displayed higher perceived presence of meaning in life and reduced search for meaning in life (Routledge et al., 2012). Additionally, research has shown that high nostalgia proneness insulates individuals from meaning threats that accompany awareness of death (Routledge et al., 2008; Juhl et al., 2010). Finally, and most germane to the present research, nostalgia increases positive affect. Participants instructed to think about a nostalgic event showed increased positive affect relative to participants who thought about an ordinary life event (Wildschut et al., 2006, 2010). In sum, abundant research indicates that nostalgia functions as an important psychological resource, providing boosts in positive self-regard, social connectedness, meaning, and positive affect.

MEMORY RECALL PERSPECTIVE

As noted above, memories can be recalled from a first person perspective (seeing the memory through one's own eyes, as one experienced it) or a third person perspective (seeing the memory as an observer). Research has elucidated various determinants of memory recall perspective, one of which is the individual's emotional motivations at the time of recall (Sutin and Robins, 2008). Individuals encouraged to focus on their feelings toward a past event are more likely to recall it from a first person perspective, while individuals encouraged to focus on the concrete objective aspects of a past event are more likely to recall it from a third person perspective (Nigro and Neisser, 1983). Furthermore, research indicates that memories individuals currently associate with positive or negative affect tend to be recalled from a first person perspective, whereas memories experienced neutrally tend to be recalled from a third person perspective (D'Argembeau et al., 2003).

Research has also examined the consequences of recalling memories from a first or third person perspective. McIsaac and Eich (2002) demonstrated that memories for an experimental task recalled from a first person perspective where richer in affective reactions, physical sensations, and psychological states, while memories of the task recalled from a third person perspective included more information about spatial relations and peripheral details. Other research shows that third person perspective recall serves an emotionally distancing function, alleviating painful emotions associated with some memories (Williams and Mould, 2007). College students who recalled intrusive memories from a third person perspective reported greater detachment from and numbness toward the event compared to students who recalled similar memories from a first person perspective. However, this distancing function of third person perspective also was found for memories associated with positive emotions. Holmes et al. (2008) showed that recalling a positive event from a third person perspective resulted in less felt positive affect compared to imagining the event from a first person perspective.

Taken together, the determinants and consequences of memory recall perspective point to greater affective involvement and attachment with memories recalled from a first person perspective and more dispassionate and detached responses to memories recalled from a third person perspective. These findings suggest that visual perspective may impact the positive affective consequences of nostalgic reflection.

THE PRESENT RESEARCH

The present research examined whether manipulating memory recall perspective impacts the usual positive affective gains of waxing nostalgic. Recalling memories from a first person perspective generally increases affective engagement with those memories compared to third person perspective recall, which is marked by distancing and detachment. I hypothesized that participants engaged in first person perspective recall who brought to mind an event for which they felt nostalgic, compared to an ordinary past event, would report higher levels of positive affect.

However, this relationship would be attenuated for participants who recalled memories (nostalgic vs. ordinary past events) from a third person perspective.

METHODS

Participants completed materials online and in the order described below.

Participants

Amazon Mechanical Turk (MTurk; Buhrmester et al., 2011) workers in the United States ($N = 409$; $M_{age} = 33.10$, $SD_{age} = 12.15$; 223 females, 108 males; six not specified; 7.1% Hispanic, 1.2% not specified; 1.2% Indian, 4.9% Asian, 1.0% American Indian/Alaska Native, 8.1% Black, 78.7% White, 3.4% Multiple, 0.2% Native Hawaiian/Pacific Islander, 1.7% Other, and 0.7% not specified) completed materials and were compensated $0.50. I aimed to sample 100 participants per condition per lab convention.

Procedure and Materials

After providing informed consent, participants were randomly assigned to recall either an event for which they felt nostalgic or an ordinary past event and to further reflect upon the memory from either a first or third person perspective. All participants then completed a variety of measures, including a measure of affect (Watson et al., 1988), authentic living (Wood et al., 2008), self-esteem (Rosenberg, 1965), and meaning in life (Steger et al., 2006)[1]. Finally, all participants read a debriefing page and were provided information about receipt of compensation.

Recall Event Manipulation

After completing a filler personality measure (the 10-Item Personality Inventory, Gosling et al., 2003), participants were randomly assigned to reflect on either a nostalgic or ordinary past event. Participants assigned to the nostalgia condition read the following: "The Oxford Dictionary defines nostalgia as 'a sentimental longing for the past'. Please bring to mind a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic." Participants assigned to the control condition received instructions to "Please bring to mind an ordinary past event in your life. Specifically, try to think of a typical past event from your life" (adapted from Vess et al., 2012).

Memory Recall Perspective Manipulation

Participants were randomly assigned to further visualize the recalled event from either a first or third person perspective. Specifically, participants in the first person recall perspective condition were instructed to "Please visualize the event from the same visual perspective that you originally had, in other words, looking out at your surroundings through your own eyes." Participants in the third person recall perspective condition were instructed to "Please visualize the event from an observer's visual perspective, in other words, so that you can see yourself in the memory, as well as your surroundings." Then, all participants were instructed to "Please try to make your memory image as detailed as possible. Using the space provided below, please take a few moments to write about this event" (adapted from Libby and Eibach, 2002).

Recall Event Manipulation Check

Participants completed a two-item recall event manipulation check ("Right now, I am feeling quite nostalgic" and "Right now, I am having nostalgic feelings") using 1 (*strongly disagree*) to 7 (*strongly agree*) scales. Scores on the two items were combined to create a composite ($M = 4.76$, $SD = 1.85$, $r = 0.946$).

Affect Measure

Participants completed the 20-item state positive and negative affect schedule using 1 (*not at all*) to 5 (*extremely*) scales (PANAS; Watson et al., 1988). Example items include "Right now, I feel…excited, upset, proud, irritable." Scores on the 10 positive affect items were combined to create a composite ($M = 2.94$, $SD = 0.909$, $\alpha = 0.910$).

Demographic Items

Participants indicated their age, gender, ethnicity, race, native language, and any suspicions, thoughts, or feelings, about the study.

RESULTS

Preliminary Analyses: Recall Event Manipulation Check

Scores on the recall event manipulation check composite were submitted to a 2 (Recall Event: Nostalgia vs. Ordinary) × 2 (Memory Recall Perspective: first person vs. third person) between-participants ANOVA. A significant main effect of recall event emerged. Participants who recalled an event for which they felt nostalgic reported higher felt nostalgia ($M = 5.54$, $SD = 1.43$) compared to participants who recalled an ordinary past event ($M = 3.97$, $SD = 1.91$), $F(1,404) = 87.6$, $p < 0.001$, $\eta_p^2 = 0.178$. The recall event × memory recall perspective interaction was not significant, suggesting that participants in both first and third person nostalgic memory recall conditions were experiencing nostalgia before completing the positive affect measure, $F(1,404) = 0.138$, $p = 0.710$, $\eta_p^2 < 0.001$.

Primary Analyses: Positive Affect Measure

Scores on the positive affect composite were subjected to a 2 (Recall Event: Nostalgia vs. Ordinary) × 2 (Memory Recall Perspective: first person vs. third person) between-participants ANOVA. A significant main effect of recall event emerged, such that participants who recalled an event for which they

[1]I present the results from analyses on positive affect as it was the proximal dependent variable. However, results from analyses on these measures, as well as other supplemental material, can be found here: https://osf.io/5rzwk/?view_only=fabfae927c5642628e07204b5d1dffc2

felt nostalgic indicated higher positive affect (M = 3.07, SD = 0.887) compared to those who recalled an ordinary past event (M = 2.82, SD = 0.917), $F(1, 404) = 7.78$, $p = 0.006$, $\eta_p^2 = 0.019$. This main effect was qualified by a significant recall event × memory recall perspective interaction, $F(1, 404) = 4.68$, $p = 0.031$, $\eta_p^2 = 0.011$ (see **Figure 1**). In the nostalgia condition, the difference in reported positive affect between participants in the first and third person perspective conditions was not significant, $F(1, 404) = 2.29$, $p = 0.135$, $\eta_p^2 = 0.006$, however means were consistent with the above reasoning in that participants who waxed nostalgic from a third person perspective indicated slightly lower positive affect (M = 2.98, SD = 0.916) compared to those who did so from a first person perspective (M = 3.16, SD = 0.851). Looked at differently, participants in the first person perspective condition demonstrated higher positive affect after recalling an event for which they felt nostalgic (M = 3.16, SD = 0.851) compared to those who recalled an ordinary past event (M = 2.72, SD = 0.980), $F(1, 404) = 12.5$, $p < 0.001$, $\eta_p^2 = 0.030$. However, participants in the third person perspective condition displayed no difference in positive affect after recalling either an event for which they felt nostalgic (M = 2.98, SD = 0.916) or an ordinary past event (M = 2.92, SD = 0.836), $F(1, 404) = 0.191$, $p = 0.662$, $\eta_p^2 < 0.001$.

DISCUSSION

Research has demonstrated nostalgia's importance as a fount of positive affect. However, the potential influence of memory recall perspective on the positive affective outcomes of nostalgia is absent from the empirical literature. This is a notable gap because memory recall perspective impacts how memories are affectively experienced, and thus may impact nostalgic reflection's positive affective consequences. The impetus of this research was to begin to fill this gap by examining how manipulating memory recall perspective impacts felt positive affect following nostalgic reverie or ordinary event recall.

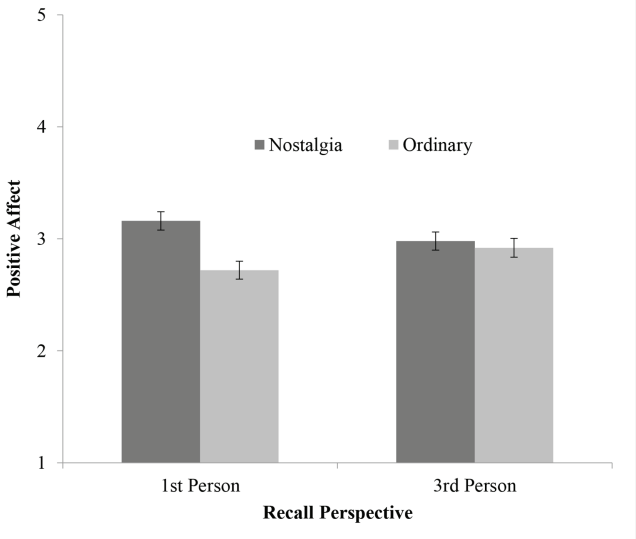

FIGURE 1 | Recall event × recall perspective interaction on positive affect. Higher scores indicate higher positive affect.

Engagement with the emotional content of nostalgic narratives may be crucial to nostalgia's effectiveness as a well-spring of positive affect. First person perspective recall is indicative of greater emotional engagement with a recalled event while third person perspective recall is characterized by greater detachment from recalled events. Therefore, I hypothesized and found that compared to participants who recalled an ordinary past event, those who recalled an event for which they felt nostalgic from a first person perspective indicated higher positive affect. However, recalling a nostalgic event from a third person perspective resulted in no positive affective difference compared to recalling an ordinary past event.

These initial findings may have methodological implications for nostalgia-related research. Often when the type of recalled event is manipulated in research studies, participants in the nostalgia condition are prompted to take a few moments to immerse themselves in the experience of the event for which they are nostalgic (e.g., Vess et al., 2012). Given that emotional engagement is more strongly associated with first person perspective recall (e.g., Williams and Mould, 2007; Holmes et al., 2008), such a prompt encouraging immersion in the nostalgic memory may promote recalling it from a first person perspective and thus aid in facilitating the positive affective outcomes that follow.

This research includes limitations and future directions to note. As this study is an initial examination of memory recall perspective's impact on the positive affective consequences of nostalgia, future research is required to both corroborate and more extensively explore the relationship between memory recall perspective and nostalgic reflection. Relatedly, relevant effect sizes are small to moderate, yet are comparable to those typically observed in experimental social psychology research (Funder and Ozer, 2019). The above illuminate potential routes for further research. For example, future research should examine the extent to which, compared to other types of memory, nostalgic reflection naturally occurs from a first or third person perspective. Such research could potentially provide additional insight into nostalgia's function as a source of positive affect. Given that memories recalled from a first person perspective tend to be more affect-laden, nostalgia's effectiveness as a fount of positive affect may be influenced, in part, by a propensity to recall memories for which one feels nostalgic from a first person perspective.

Relatedly, research indicates that compared to non-depressed adolescents, depressed adolescents were more likely to recall autobiographical memories from a third person perspective (Kuyken and Howell, 2006). Furthermore, depressed adults remembered more positive memories from a third person perspective compared to adults who were not depressed (Legmogne et al., 2006). As research reviewed previously indicates, third person perspective recall is associated with affective distancing and detachment. Given the current findings that when recalling memories from a first person perspective,

nostalgic reverie, compared to recalling an ordinary past event, resulted in higher positive affect; future research could examine how encouraging first person perspective nostalgic reflection among people living with depression may potentially produce more positive affective engagement, as well as other beneficial outcomes. Indeed, recent research explored the potential impacts of nostalgia-themed (vs. neutral) public service announcement videos about a college counseling center among a sample of college students living with depression (Hussain and Alhabash, 2020). Participants who viewed the nostalgia-themed video indicated greater positive emotion (e.g., warm and joyful) compared to those who viewed the neutral video. This effect led to more positive attitudes toward the counseling center and in turn, to greater behavioral intentions to contact the counseling center in the future.

Finally, research from a mood congruence model (MCM) perspective indicates that chronically sad people perceive mood incongruence when recalling a positive past self (Gebauer et al., 2008). This mood incongruence fosters a perception of greater temporal distance between the current (sad) self and the past (happy) self, resulting in a contrast effect and a decrease in self-esteem. However, nostalgia-related research has indicated that negative mood and loneliness can trigger nostalgia, which sometimes then serves to increase self-esteem (Wildschut et al., 2006). Perhaps these divergent findings could be reconciled by considering memory recall perspective. If, when in a negative mood, nostalgic reflection (compared to reflection on a past positive self) is engaged *via* a first person perspective, perhaps emotional connection with a "nostalgic self" fosters feelings of temporal recency despite mood incongruence. Future research should examine whether nostalgic reverie triggered by negative mood leads to increases in self-esteem, at least in part, *via* the emotional engagement characteristic of a first person perspective recall, whereas reflection on a positive past self leads to reduced self-esteem by way of the mechanisms outlined in the mood congruence model.

DATA AVAILABILITY STATEMENT

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found in the article/supplementary material.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Institutional Review Board, Ohio University. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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Attenuating Pain With the Past: Nostalgia Reduces Physical Pain

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Previous work has found that nostalgia, a sentimental longing for the past, is associated with psychological, emotional, and social benefits. Recent research has demonstrated that nostalgic reflection also can improve individuals' physical health (i.e., exercise) and reduce temperature-related pain. Building on this, two experiments examined how nostalgia can reduce people's pain perceptions (i.e., reduced severity and increased tolerance). Specifically, Study 1 showed that inducing nostalgia through a writing task decreased perceived pain severity (i.e., intensity) among self-reported chronic pain sufferers. Study 2, in turn, demonstrated that Japanese individuals experienced increased pain tolerance (i.e., the maximum level of pain a person can tolerate) for a pressure algometer task following thoughts of nostalgia (vs. a control prime). This work provides evidence that nostalgic reflection may serve as a psychological resource to reduce the perceived severity of physical pain.

Keywords: nostalgia, physical pain, emotion, health, pain tolerance

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INTRODUCTION

Pain is a pervasive problem, affecting individuals globally. In the United States, one in five adults, or 50 million Americans, suffer from chronic pain (i.e., pain persisting longer than 3 months; Dahlhamer et al., 2018). Pain is often considered a silent epidemic because of (a) a lack of public awareness about its prevalence and (b) the likelihood of pain increasing physical, psychological, social, and financial costs. Research has shown that chronic pain leads to reduced health and quality of life, greater relationship conflict, and higher rates of depression and suicide (e.g., Takai et al., 2015).

The most common form of pain treatment is pharmacological therapy. Despite the integral role that medication plays in pain management, research suggests not all individuals experience the same degree of relief from prescription remedies. Breivik et al. (2006) found that nearly half of chronic sufferers do not use medication to treat their pain, with many persons citing drug-related complications (e.g., side effects and addiction) as the reason for their discontinued use. As a result, approximately two-thirds of chronic pain sufferers report implementing forms of non-drug treatments (Breivik et al., 2006).

Several interdisciplinary practices, such as mindfulness (e.g., Tai Chi), guided imagery, relaxation, and biofeedback, modulate pain perception by increasing resilience (Villemure and Bushnell, 2002; Roditi and Robinson, 2011; Peng, 2012). Cognitive-behavioral practices, such as reframing and decatastrophizing, can also help to alleviate pain (Gatchel et al., 2007). Collectively, these types of interventions are effective for chronic pain patients, who see improved physical and psychological health compared to control conditions (Ehde et al., 2014).

However, there are problems with the feasibility of these options. First, many methods necessitate long-term commitment (i.e., time, dedication) to be effective. Second, persons who engage in mind-body exercises (e.g., yoga) are mostly higher socioeconomic groups (e.g., college-educated, urban dwellers; Cramer et al., 2016). Finally, strategies grounded in physical exercise may be difficult for chronic sufferers given their limited mobility and/or pain experience, making different body postures difficult to perform (Peng, 2012). This is especially true for older adults (Morone and Greco, 2007). One strategy that may be effective in reducing pain perceptions is the psychological resource of nostalgia: a sentimental longing for the past.

Although nostalgia can be a bittersweet experience infused with sentiments of negativity (e.g., separation from a loved one; Sedikides et al. (2008), coded narratives of nostalgic events often contain greater traces of positive (e.g., happiness and gratitude) rather than negative emotion (e.g., loneliness, depression; Hepper et al. (2012). This has led some researchers to suggest that nostalgia helps people manage unpleasant or harmful psychological states. For example, nostalgia's role in regulating threats to well-being has been shown to counteract feelings of loneliness, meaninglessness, and boredom (see e.g., Sedikides and Wildschut, 2020).

One question is whether nostalgia can help individuals when they experience *physical* harm, specifically, physical pain. Research by Zhou et al. (2012) began to address this question. These studies showed that participants in a state of nostalgia were able to hold their hand in a bucket of ice water for a longer period of time compared to participants asked to think about an ordinary event. In addition, uncomfortably low temperatures, both experimentally induced and naturally occurring, were associated with greater frequency of nostalgic thought. What is not answered by this work, however, is whether nostalgia can (a) regulate pain more generally, not necessarily associated with temperature; (b) be functional for individuals who suffer from chronic pain; and (c) impact subjective self-reports of pain severity.

The current research examined whether nostalgic thinking can decrease pain. There are qualitative differences in defining pain *severity* (i.e., intensity) and *tolerance* (i.e., the maximum level of pain a person can tolerate). Although both fall under the broader category of *pain perception*, the two constructs measure different experiences. For both studies here, we use *pain perception* to discuss general study findings; however, each experiment uses specific terminology as intended by scale/instrument developers. Study 1 was conducted among a community sample of chronic pain sufferers. Study 2 examined the extent to which nostalgia increased tolerance for mechanically evoked pain via a pressure algometer. It was hypothesized, in both experiments, that activating thoughts of nostalgia would lead to reduced pain [i.e., lower self-reported severity (Study 1); higher tolerance to evoked pain (Study 2)]. Given that nostalgia research is predominantly conducted among White/Caucasian samples, which is also reflected in our first experiment, an additional goal of the second study was to test the cultural generalizability of nostalgia in a sample of Japanese individuals.

STUDY 1

Study 1 tested whether recalling a nostalgic (vs. ordinary) event would lead to lower perceived pain severity among chronic sufferers.

Method

Participants

Power was determined based on the moderate (d = 0.38) to large (d = 0.81) effect sizes found in the nostalgia literature (Ismail et al., 2020). Using G*Power (Faul et al., 2007) for a mixed-design analysis of variance (ANOVA) to detect a moderate effect (f = 0.25) with power set at 0.80, a minimum of 34 individuals were needed. We recruited 206 workers from Amazon's Mechanical Turk (MTurk; 123 females; age range 20–74 years, M_{age} = 37.31, SD_{age} = 11.24; 163 White/Caucasian).

To select chronic pain sufferers, we presented participants with a modified version of the Standards of Chronic Pain scale (Deyo et al., 2014). Specifically, individuals rated (a) the length of time that their pain has been an ongoing problem (*Less than 1 month*; *1–3 months; 3–6 months*; *6 months-1 year; 1–5 years; More than 5 years)* and (b) how often their pain had been an ongoing problem over the past 6 months (*Every day or nearly every day in the past 6 months; At least half the days in the past 6 months; Less than half the days in the past 6 months*). Participants met the criteria for having chronic pain if they provided a response of *greater than 3 months* to Question A and a response of *at least half the days in the past 6 months* to Question B. Only these individuals were eligible to participate in the study and were paid $2.00.

Materials and Procedure

Study 1 was conducted online. Following a baseline measure of pain severity, persons were randomly assigned to write about a nostalgic or ordinary (control) event. Participants then completed a post-manipulation measure of their perceived level of pain and provided demographic information. The study took approximately 15 min to complete.

Time 1 pain perception

Participants completed the Pain Numeric Rating Scale (NRS-11; Hartrick et al., 2003), which is a widely used clinical assessment of physical pain. Individuals rated their current pain level (*How would you rate your pain right now?*) on an 11-point scale (0 = *No pain*; 10 = *Worst pain imaginable*). Three additional items were included, but not analyzed, given the state nature of the nostalgia manipulation: *How would you rate your USUAL level of pain during the last week?*; *How would you rate your LOWEST level of pain during the last week?*; and *How would you rate your WORST level of pain during the last week?*

Nostalgia manipulation

Individuals were randomly assigned to either a nostalgia or control condition (see e.g., Wildschut et al., 2006). In the nostalgia condition, participants 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 were instructed to *bring to mind an ordinary event in your life*.

Following this, everyone completed a manipulation check by answering three questions (see e.g., Routledge et al., 2008): *Right now, I am feeling quite nostalgic*; *Right now, I am having feelings of nostalgia*; and *I feel nostalgic at this moment*. Responses were made on a 9-point scale (1 = *Strongly disagree*, 9 = *Strongly agree*; $\alpha = 0.99$).

Time 2 pain perception

Participants were again asked to report their level of *current* perceived pain severity using the NRS.

Results and Discussion

Manipulation Check

Nostalgic participants ($M = 7.49$, $SD = 1.64$) reported greater state-level nostalgia than did those who wrote about an ordinary event ($M = 3.79$, $SD = 2.35$), $F(1,204) = 173.48$, $p \leq 0.001$, $d = 1.85$.

Pain Perceptions

A 2 (between-subjects variable: nostalgia vs. ordinary event) × 2 (within-subjects variable: Time 1 vs. Time 2) mixed-design analysis of variance (ANOVA) was performed on pain perception scores. The results revealed a non-significant main effect of nostalgia manipulation, $F(1,204) = 2.62$, $p = 0.107$, $d = 0.36$, and a significant main effect of time, $F(1,204) = 9.84$, $p = 0.002$, $d = 0.88$. There was also a significant nostalgia x time interaction, $F(1,204) = 7.67$, $p = 0.006$, $d = 0.79$ (see **Table 1**). Simple main effects revealed that participants in the nostalgia condition reported lower pain severity at Time 2 compared to Time 1, $F(1,204) = 17.79$, $p \leq 0.001$, $d = 0.99$. There was no effect of time for individuals who recalled an ordinary event, $F(1,204) = 0.07$, $p = 0.797$, $d = 0.06$. Looked at differently, there was no difference between nostalgia and control conditions at Time 1, $F(1,204) = 0.55$, $p = 0.459$, $d = 0.11$. At Time 2, however, participants who recalled a nostalgic event had lower perceived pain severity compared to individuals who recalled an ordinary event, $F(1,204) = 5.50$, $p = 0.020$, $d = 0.65$.

Study 1 offers initial support for the physical pain-buffering effects of nostalgic reverie. Although no differences in perceived pain severity emerged between the nostalgia and control conditions at baseline, chronic sufferers reported their physical pain to be less severe after recalling a nostalgic (vs. ordinary) event. These findings indicate that, like other psychological resources that help reduce chronic pain (e.g., mindfulness and meditation), nostalgia may provide a form of perceived pain relief.

There are some limitations to be addressed. Study 1 was focused on subjective ratings of perceived pain severity, but the real levels of pain people experienced were unclear. Therefore, it has not yet been determined whether nostalgia changes actual tolerance for painful stimuli. To make a convincing case that nostalgia reduces pain, we conducted Study 2 in a controlled laboratory setting with an algometer, a well-validated measure of pain tolerance that has been utilized in previous research (e.g., DeWall and Baumeister, 2006).

Additionally, although physical pain affects all populations regardless of sociodemographic variables (e.g., age, gender, income, race/ethnicity, geography), a body of work suggests that cultural differences exist with respect to pain tolerance and expression. Even within the United States, the frequency and pain experience vary by ethnicity (Perry et al., 2019; Vaughn et al., 2019).

TABLE 1 | Pain severity scores as a function of nostalgia condition.

	Time 1		Time 2	
	M	*SD*	*M*	*SD*
Nostalgia Condition	5.63	1.95	5.15	1.92
Control Condition	5.83	1.98	5.80	2.06

Higher scores indicate greater perceived pain (Study 1).

STUDY 2

People from Asian countries (generally) and individuals living in Japan (specifically) report a greater tendency to experience pain than do persons from the United States or Europe (Rowell et al., 2011). Additionally, research shows that Asian individuals have lower pain thresholds and reduced tolerance for heat (Watson et al., 2005; Kim et al., 2017), cold (Hsieh et al., 2010), capsaicin (Gazerani and Arendt-Nielsen, 2005), and pressure pain (Komiyama et al., 2007) compared to non-Hispanic Whites and African Americans. In Japan, persons believe that the expression of pain behaviors (e.g., verbal complaints and facial expressions) are more socially unacceptable compared to Americans (Hobara, 2005). Despite evidence demonstrating that individuals from Asian countries are more sensitive to pain than are those from other societies, research has yet to examine how nostalgia can be utilized to increase capacity for pain among these samples.

The purpose of Study 2 was twofold. First, whereas Study 1 investigated whether nostalgia buffers pain severity for chronic sufferers, Study 2 measured college students' tolerance for inflicted pain in a laboratory setting. Second, we tested whether nostalgia has the potential to reduce physical pain perceptions among Japanese individuals. To do this, participants were exposed to the same nostalgia manipulation used in the previous experiment (Wildschut et al., 2006). The dependent variable consisted of a pain pressure task where an algometer was placed on the person's non-dominant hand to assess pain tolerance (DeWall and Baumeister, 2006). It was hypothesized that participants would show greater tolerance for pain following thoughts of nostalgia in comparison to the control condition.

Method

Participants

Utilizing G*Power (Faul et al., 2007) for a mixed-design ANOVA, and based on the effect size from Study 1 ($d = 0.79$, $f = 0.40$) with power set to 0.80, a minimum of 16 persons were needed. We recruited 81 undergraduate students (41 females; $M_{age} = 22.55$) from Kyoto University in Japan, who received ¥1000 Japanese Yen (i.e., approximately $8.79 American dollars).

Materials and Procedure

Participants completed a "personality and physiological sensation" study in a laboratory setting. After providing informed consent, participants took part in a baseline pain pressure task. Similar to Study 1, participants were randomly assigned to write about a nostalgic or ordinary event, and then all participants completed a final pain pressure task. All study materials took approximately 20 min to complete.

Time 1 pain pressure task

Pain tolerance was measured using a pressure algometer (Wagner Instruments FPX 25; Greenwich, CT, United States). This device assesses the amount of pressure applied to a bone or muscle and has been commonly used as a method of assessing pain tolerance in medicine and psychology research (e.g., DeWall and Baumeister, 2006; Lacourt et al., 2012, 2015). The algometer (1 cm^2 rubber-tipped contact area) was gradually applied with increasing pressure (100 kPa/s) perpendicularly at the first dorsal interosseous muscle of the participant's non-dominant hand. Participants were instructed to say "stop" when the pain became too uncomfortable to continue. When the individual requested the pressure to cease, the algometer was immediately stopped, with the machine automatically recording the amount of pressure applied prior to cessation. Greater pressure applied indicated higher pain tolerance.

The risks involved with the algometer task were minimal. Participants were informed verbally and in writing (i.e., informed consent) that a hand pressure gauge would be used during the study to elicit pain. The task was completely voluntary and individuals could stop participation at any time without penalty. The experimenter checked on persons' well-being immediately after the task, and again, at the end of the study (i.e., debriefing). Participants were provided with contact information for researchers in the event that they had further questions/concerns about the experiment.

Nostalgia manipulation

Participants were exposed to the same writing task and three-item state nostalgia measure (manipulation check) described in Study 1 ($\alpha = 0.95$).

Time 2 pain pressure task

Following the nostalgia manipulation, pain tolerance scores were measured using the same procedures described above (baseline).

Results and Discussion

Manipulation Check

The results revealed a significant effect of condition, $F(1,76) = 97.22$, $p \leq 0.001$, $d = 0.74$, with participants exposed to the nostalgia prompt ($M = 6.55$, $SD = 1.53$) reporting higher feelings of state nostalgia compared to persons in the ordinary event condition ($M = 2.83$, $SD = 1.78$).

Pain Tolerance

A 2 (between-subjects variable: nostalgia prompt vs. ordinary event prompt) × 2 (within-subjects variable: Time 1 vs. Time 2) mixed-design ANOVA was performed on pain scores. The results revealed a non-significant main effect of nostalgia manipulation, $F(1,79) = 1.84$, $p = 0.179$, $d = 0.27$, and a significant main effect of time, $F(1,79) = 5.07$, $p = 0.027$, $d = 0.60$. Importantly, there was a significant nostalgia × time interaction, $F(1,79) = 18.65$, $p \leq 0.001$, $d = 0.99$ (see **Table 2**). Simple main effects revealed that nostalgic participants reported higher tolerance for pain at Time 2 compared to Time 1, $F(1,79) = 21.32$, $p \leq 0.001$, $d = 1.00$. No difference was found between time points for participants who wrote about an ordinary event, $F(1,79) = 2.16$, $p = 0.145$, $d = 0.31$. Conversely, whereas there was no significant difference between nostalgia and control conditions at Time 1, $F(1,79) = 0.01$, $p = 0.993$, $d = 0.05$, participants who recalled a nostalgic event had higher pain tolerance scores at Time 2 compared to individuals who recalled an ordinary event, $F(1,79) = 6.12$, $p = 0.016$, $d = 0.69$.

Whereas Study 1 suggests that nostalgia can help reduce the perceived severity of naturally occurring chronic pain, the results of the present experiment demonstrate that students also respond to nostalgic reflection with a heightened tolerance for pain following a mechanically induced pain procedure. Specifically, although there was no significant difference between nostalgia and control conditions on perceptions of pain at baseline, individuals exhibited higher pain tolerance when primed with thoughts of nostalgia versus an ordinary event. An additional benefit of this experiment was to assess the effects of nostalgia on pain using a Japanese sample of participants. Given that pain tolerance can vary as a function of the society in which one resides (Rowell et al., 2011), this study suggests that nostalgia may help both American and Japanese persons. This is especially important as the prevalence of chronic pain disabilities has become a global health priority (Goldberg and McGee, 2011).

GENERAL DISCUSSION

These experiments showed that individuals primed with nostalgic reflection reported a reduction in chronic pain severity (Study 1) and temporary pain tolerance (Study 2). Additionally, whereas Study 1 was conducted among an American sample of participants, Study 2 demonstrated parallel effects in Japanese persons. These findings demonstrate the restorative function of nostalgic reflection in that individuals from two varied cultures reported increased pain resilience in response to nostalgia.

Several studies have examined the restorative function of nostalgic reverie with respect to its capacity to offset discomforting states (e.g., meaninglessness and existential threat) and reinstate psychological equanimity (see e.g., Sedikides and Wildschut, 2020). Related results have been found with respect to temperature-related discomfort (Zhou et al., 2012). Whereas

TABLE 2 | Pain tolerance scores as a function of nostalgia condition.

	Time 1		Time 2	
	M	*SD*	*M*	*SD*
Nostalgia Condition	12.36	4.86	14.75	5.07
Control Condition	12.35	5.61	11.59	6.34

Higher scores indicate greater tolerance for pain (Study 2).

Zhou and colleagues showed that the emotion of nostalgia functions to increase participants' tolerance for noxious cold, our results found the potential for nostalgia to alleviate physical discomfort more broadly for individuals experiencing chronic and acute pain. This is important, as some studies have criticized the use of cold pressor tasks (used by Zhou et al., 2012), given it is unclear how they are associated with pain experiences in the real world (Birnie et al., 2014).

The current research is also one of a handful of studies to examine the cross-cultural implications of nostalgia. Hepper et al. (2014) research spanned across 18 countries (including American and Japanese participants) and five continents to survey global perceptions of nostalgia. Participants displayed a high level of agreement when defining the features of nostalgia - in particular, *remembering*, *longing/yearning*, and *fondness*. Our Study 2 adds to these findings with a Japanese population, an understudied group in the emotion and nostalgia literatures.

In light of this work, one question is *how* or *why* nostalgia leads to heightened pain resilience. First, prior work has demonstrated that nostalgic reflection increases optimism, self-esteem, positive affect, and perceived social support (see e.g., Sedikides and Wildschut, 2020). These same variables have been found in the health literature to reduce the pain experience (e.g., Affleck et al., 2001; Strand et al., 2006; Sturgeon and Zautra, 2010). Second, nostalgia may play a motivational component, fostering beliefs that one *can* achieve goals when reminiscing about the past (see e.g., Sedikides and Wildschut, 2020). In this way, participants may have responded to the nostalgia prime with a motivation to reframe their painful experiences in a less noxious way. Future research should test these and other possible explanations for the mechanism by which nostalgia reduces pain.

Importantly, we are not recommending nostalgia as an initial treatment or a substitute for other interventions when serious medical attention is required. Our manipulation did not actually treat the source of pain or alleviate an underlying condition; rather, it helped people manage the discomfort they felt. Whereas nostalgic thought may have tangible, physiological outcomes, much more research is needed before making claims about it as a viable treatment option. For instance, although our participants were blind to treatment conditions (i.e., nostalgia vs. control), work should be done wherein individuals are privy to the possibility of nostalgia as a pain reducing intervention. Before practitioners can legitimately recommend or use nostalgia among patients, we need to know how it affects pain resilience when people are aware of its purpose.

The current work is not without limitations. The first experiment was conducted with an MTurk population to extend the generalizability of the results, but it is not known whether individuals were verifiably chronic pain sufferers given an inability to confirm medical diagnoses. Future work should aim to replicate the current findings in a controlled laboratory setting with people clinically diagnosed with chronic pain conditions; an additional benefit of studying this population would be access to a more detailed account of their medical history, related (or not) to current pain problems.

Also, the current research did not assess for health conditions co-existing with chronic pain. The pain experience is often accompanied with other serious health detriments, including mental (e.g., depressive and anxiety) and physical ailments (e.g., hypertension and sleep disturbances). If nostalgia is effective at reducing pain severity for chronic pain sufferers, it may also help reduce comorbid health abnormalities. This is supported by research demonstrating that nostalgia is effective at ameliorating feelings of loneliness (Zhou et al., 2008), lowering stress (Routledge et al., 2011), buffering relational, existential, and death anxieties (e.g., Routledge et al., 2008; Juhl et al., 2010), heightening a sense of vitality (Routledge et al., 2011), and promoting health behaviors (Kersten et al., 2016). Future studies screening pain populations might ascertain the extent to which chronic disabilities are comorbid with other disorders, and how such disorders may impair health.

It is also important to examine whether pre-existing pain severity and/or duration moderate the relationship between nostalgic reflection and pain tolerance. Although the beneficial qualities of nostalgia transcend age, gender, and culture (Sedikides et al., 2015), it is unclear whether these effects would translate to chronic pain sufferers, as the condition is a multidimensional phenomenon that can vary widely (e.g., intensity and persistence). Similar to Verplanken's (2012) findings that individuals who were high (vs. low) in habitual worrying respond to nostalgic reflection with greater signs of anxiety and depression, it is possible that nostalgia may only be an effective remedy for persons with low or moderate pain severity.

Finally, the current studies focused on the immediate benefits of nostalgia on pain reduction; however, future research should test its capacity to provide more long-term relief. To consider it a legitimate method of treatment for chronic sufferers, it is important to measure the duration of nostalgic thought and to test ways to revisit nostalgia over time to gain the most effective outcomes. Relatedly, a direction for future research is to examine carryover effects from reduced pain following thoughts of nostalgia with respect to psychological, emotional, and social health. Given the detrimental effects of chronic pain on many aspects of life, it would be valuable to test how diminished physical pain could improve individual outcomes, such as mood, life satisfaction, and meaning in life.

Despite limitations, these studies provide initial evidence for nostalgia's capacity to reduce the severity of physical pain and increase pain tolerance. Given that nostalgia is internally generated, universally experienced, and exempt from serious health costs or risks, it could serve as an easily implemented, widely available, and highly safe alternative pain intervention. This is important given racial, income, and geographic disparities that might limit accessibility to quality healthcare for some individuals (Lynch et al., 2008). For medical professionals looking to recommend immediate forms of pain relief, nostalgia may be useful with other forms of medication and/or mind-body techniques to maximize the relief of chronic physical pain.

In closing, given the prevalence of chronic pain, its effects on well-being, and the difficulty in treatment, it remains important to identify factors that modulate the severity of pain. Similar to other biopsychosocial techniques that are effective therapies for people seeking help with pain, nostalgia may also serve as a promising, cost-effective promoter of homeostasis that

is available to all ages, genders, and cultures. To address the silent epidemic of chronic pain conditions worldwide, the present work demonstrated that sufferers may find solace by attenuating pain with the past.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Texas Christian University (TCU) Institutional Review Board (IRB). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

MK and CC conceived the original project idea. MK, CC, TK, KN, and TW collected the data for all the experiments. MK, JS, and CC analyzed all the data. MK wrote the manuscript with support from JS, CC, and TK. All authors contributed to the article and approved the submitted version.

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Nostalgia Proneness and the Collective Self

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In two studies, we examined the association between nostalgia proneness (i.e., trait-level nostalgia) and importance of the collective self. In Study 1, we tested and supported the hypothesis that nostalgia proneness is positively correlated with relational collectivism, which entails an emphasis on one's connections with close others and small social networks. In Study 2, we demonstrated that nostalgia proneness is also positively correlated with group collectivism, which emphasizes one's membership in more abstract, larger social groups or categories, and was reflected in increased identification with a national ingroup. These findings offer insight into the nature of nostalgia proneness—a consequential and stable personality trait.

Keywords: nostalgia proneness, relational collectivism, group collectivism, ingroup identification, collective self

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INTRODUCTION

Nostalgia, "a sentimental longing … for the past" (Pearsall, 1998, p. 1266), is an ambivalent, albeit predominantly positive, and social emotion (Hepper et al., 2012a; Sedikides and Wildschut, 2016; for historical overviews, see Batcho, 2013; De Diego and Ots, 2014). When people nostalgize, they feel connected with others in a way that enhances their perceptions of belongingness and acceptance (Sedikides et al., 2015, 2016; Abakoumkin et al., 2019). In nostalgic reverie, "the mind is 'peopled'" (Hertz, 1990, p. 195). Mental representations of social bonds (e.g., family, friends, and partners) form the building blocks of nostalgic memories; important figures from one's past are brought to life and become part of one's present (Davis, 1979; Batcho, 1998; Abeyta et al., 2015; Wildschut et al., 2018). As a result, nostalgia makes one feel loved, supported, and efficacious in social relations (Zhou et al., 2008; Wildschut et al., 2010). However, most of the research on the sociality function of nostalgia has been concerned with momentary or transient (i.e., state-level) nostalgia. In the present investigation, we focus on the role of trait-level nostalgia (i.e., nostalgia proneness; Sedikides et al., 2004; Wildschut and Sedikides, in press).

The extant literature indicates that nostalgia proneness is positively related with various indices of sociality. High-nostalgia (compared to low-nostalgia) individuals value social inclusion. In an early study (Batcho, 1998), participants first completed the Nostalgia Inventory (NI; Batcho, 1995), which assesses nostalgia proneness across different aspects of everyday life. Specifically, participants rated how much they generally missed each of 20 items from when they were younger (e.g., "someone I loved," "the way people were," "my pets"). The average rating was used to classify participants as high nostalgia and low nostalgia by selecting the top and bottom 25% of the sample, respectively. Next, participants rated themselves on 10 aspects of personality, including the extent to which they preferred activities with people rather than alone.

High-nostalgia (compared to low-nostalgia) participants reported a stronger preference to be with other people rather than alone.

More recently, Juhl et al. (2020) showed the positive associations of nostalgia proneness with three core features of human sociality: empathy (Eisenberg and Strayer, 1987), attachment security (Mikulincer and Shaver, 2011), and prosocial or charitable behavior (Batson, 2011). Across five studies, nostalgia proneness was consistently associated with greater affective empathy (assessed with various measures; e.g., "Seeing people cry upsets me"; Mehrabian and Epstein, 1972), including among young children. Moreover, the link between nostalgia proneness and affective empathy held when controlling for domain-level (Big Five) personality traits and did not vary significantly as a function of age or gender. Juhl et al. further showed that high-nostalgia (compared to low-nostalgia) individuals evinced greater attachment security (assessed with the Security subscale of the Attachment Style Questionnaire; e.g., "I trust other people and I like it when other people can rely on me"; Hofstra et al., 2005). Attachment security, in turn, mediated the relation between nostalgia proneness and empathy. High-nostalgia (compared to low-nostalgia) individuals were more likely even to donate money to charity when given the opportunity to do so, and this relation was mediated serially by attachment security and affective empathy.

The distinctive sociality of nostalgia proneness is brought into sharp relief when nostalgia is contrasted with two other modes of thinking about one's past: rumination (Rusting and Nolen-Hoeksema, 1998) and counterfactual thinking (Epstude and Roese, 2008). Cheung et al. (2018) examined how nostalgia, rumination, and counterfactual thinking are similar or different in terms of their relation with seven functions of autobiographical memory (i.e., usages of memory or motives to remember; Harris et al., 2014): intimacy maintenance (attaining symbolic proximity to close but absent others), teach/inform (transmitting insights about oneself or life), self-regard (carrying over effective problem-solving strategies to present action, clarifying one's identity), bitterness revival (rekindling resentment for having been wronged by others), conversation (enlivening current social exchange), boredom reduction (counteracting tedium), and death preparation (coping with mortality awareness). The uniqueness of nostalgia proneness (compared to rumination and counterfactual thinking) resided in its comparatively strong positive association with intimacy maintenance and weak association with bitterness revival. Nostalgia-prone individuals, then, indicate that they use autobiographical memories to stay connected to loved ones and not to stir up bitterness toward others.

In light of this cumulative evidence, we propose that nostalgia-prone individuals assign greater importance to the collective self. Whereas the individual self refers to those unique aspects of the self-concept that differentiate the person from others and distinguishes him or her within the social context, the collective self refers to those aspects of the self-concept that are shared with other members of the social groups to which one belongs and is based on social bonds to others (Sedikides and Brewer, 2001). Brewer and Chen (2007) distinguished between two forms of self-definition at the collective level, with distinct implications for psychological functioning. Relational collectivism refers to an emphasis on one's bonds to close others and small social networks. Group collectivism denotes an emphasis on one's membership in more abstract, larger social groups or categories. In Study 1, we tested the association of nostalgia proneness with relational collectivism (and individualism). In Study 2, we extended this line of inquiry by examining the link between nostalgia proneness and group collectivism, as reflected in (national) ingroup identification. Our overarching objective was to tighten the nomological net around nostalgia proneness and thereby better understand this consequential and stable personality trait (Wildschut and Sedikides, in press).

STUDY 1

In Study 1, we used survey data available from the Longitudinal Internet Studies for the Social Sciences (LISS) panel. Participants completed measures of nostalgia proneness, individualism, and relational collectivism. The measures of individualism and collectivism incorporated a further, cross-cutting distinction between a horizontal and vertical orientation (Singelis et al., 1995; Triandis and Gelfand, 1998). A horizontal orientation emphasizes similarities between oneself and others. Thus, horizontal individualism involves self-reliance without a desire to differentiate oneself by achieving high status, and horizontal collectivism emphasizes interdependence with others without submitting oneself to others. A vertical orientation emphasizes hierarchies and differences between oneself and others. Accordingly, vertical individualism involves distinguishing oneself through competition and status acquisition, and vertical collectivism involves subordinating and sacrificing oneself for the sake of one's social relations. We hypothesized that nostalgia proneness would be positively related to both horizontal and vertical collectivism dimensions (but not to individualism dimensions).

Method

Data Collection

The LISS panel[1] includes members of the Dutch general public selected based on a true probability sample of Dutch households. Panel members complete studies each month, and their responses can be combined across studies. Data collection is managed by CentERdata in Tilburg, The Netherlands. We assembled the dataset from three LISS studies. "Background Variables" (completed April 2011) contained demographic measures, "Nostalgia—part 1, wave 1" (completed November 2012) contained measures of nostalgia proneness, and "Self-Regulatory Orientation" (completed April 2011) contained measures of collectivism and individualism. Data for the "Background Variables" study are updated monthly, and we used the data collected in the same month as the "Self-Regulatory Orientation" study. The "Nostalgia" study assessed nostalgia proneness at six timepoints. We selected the timepoint (part 1, wave 1) that was closest to the "Self-Regulatory Orientation" study.

[1]www.surveydata.nl/liss-panel-data-archive

Participants

Eight hundred sixty-eight participants completed measures of nostalgia proneness, collectivism, and individualism, as well as demographic information (457 women, 411 men; M_{age} = 52.13 years, SD_{age} = 16.40 years, $Range_{age}$ = 16–91 years).

Nostalgia Proneness

Participants in the "Nostalgia—part 1, wave 1" LISS study completed the Southampton Nostalgia Scale (SNS; Barrett et al., 2010) and the NI (Batcho, 1995). For the SNS, they responded to seven items. Three of them measured the extent to which participants found nostalgia valuable, important, or significant (1 = *not at all*, 7 = *very much*), and four measured how frequently participants became nostalgic (1 = *very rarely*, 7 = *very frequently*). We averaged responses to create SNS scores (α = 0.94; M = 4.12, SD = 1.23). For the NI, participants indicated how nostalgic (1 = *not at all*, 6 = *very much*) they felt about 20 objects (e.g., "someone I loved" and "my childhood toys"). We averaged responses to create NI scores (α = 0.93; M = 3.83, SD = 1.11). We used two measures of nostalgia proneness for the purpose of convergent validation (Campbell and Fiske, 1959; Wildschut and Sedikides, in press).

Individualism and Relational Collectivism

Singelis et al. (1995) developed 32 items to assess horizontal collectivism, vertical collectivism, horizontal individualism, and vertical individualism (eight items for each dimension). Triandis and Gelfand (1998) subsequently adapted 27 of these items to assess the four dimensions. Participants in the "Self-Regulatory Orientation" LISS study completed 8 of these 27 items (2 items for each dimension). These eight items were selected on the basis of their high factor loadings, as reported by Triandis and Gelfand. Participants rated the items (1 = *totally not applicable*, 7 = *totally applicable*). We averaged responses to create indices of horizontal collectivism ("If an acquaintance gets a prize, I would feel proud," "To me, pleasure is spending time with others"; α = 0.59; M = 4.77, SD = 1.25), vertical collectivism ("It is my duty to take care of my family, even when I have to sacrifice what I want," "It is important to me that I respect the decisions made by my groups"; α = 0.63; M = 4.81, SD = 1.30), horizontal individualism ("I'd rather depend on my own strength than being dependent on others," "My personal identity, independent of others, is very important to me"; α = 0.70; M = 5.28, SD = 1.22), and vertical individualism ("Winning is everything," "Competition is the law of nature"; α = 0.78; M = 3.36, SD = 1.39). The targets referred to in the collectivism items are not large social groups or categories, but specific interpersonal relationships or networks (e.g., family, friends, and acquaintances). Only one of the four collectivism items referred to groups ("It is important to me that I respect the decisions made by my groups"), and even this item alludes to relatively small social networks (i.e., "*my* groups") rather than large collectives. For this reason, the present measures tap relational (as opposed to group) collectivism. We acknowledge that the reliability coefficients are lower than desired, particularly for horizontal collectivism and vertical collectivism. This is expected, given that each index comprised only two items. Low reliability attenuates effect size and, hence, reduces statistical power (Cohen, 1988). Fortunately, our sample size (N = 868) affords sufficient statistical power (>0.80) to detect even a small effect (r = 0.10, two-tailed).

Results and Discussion

We present zero-order correlations among study variables in **Table 1**. As hypothesized, both measures of nostalgia proneness (SNS and NI) were significantly and positively correlated with both (relational) collectivism dimensions (horizontal collectivism and vertical collectivism). The nostalgia proneness measures were also positively correlated with both individualism dimensions, albeit less strongly than with the collectivism dimensions.

Consistent with prior findings (Singelis et al., 1995), the two horizontal dimensions (horizontal collectivism and horizontal individualism) and the two vertical dimensions (vertical collectivism and vertical individualism) were significantly and positively correlated. In addition, horizontal collectivism and vertical individualism were positively correlated, as were horizontal individualism and vertical collectivism. This overlap between the collectivism and individualism dimensions raises a legitimate question concerning their unique relations with nostalgia proneness. To address this, we first tested the partial correlation of each nostalgia-proneness measure with each collectivism dimension, controlling for the individualism dimensions. The positive associations between

TABLE 1 | Correlations among nostalgia proneness, collectivism, individualism, and demographics in Study 1.

S. No.	Measure	1	2	3	4	5	6	7
1.	Nostalgia proneness (SNS)	--						
2.	Nostalgia proneness (NI)	0.65***	--					
3.	Horizontal collectivism	0.19***	0.23***	--				
4.	Vertical collectivism	0.23***	0.26***	0.54***	--			
5.	Horizontal individualism	0.09*	0.07*	0.31***	0.27***	--		
6.	Vertical individualism	0.05	0.12***	0.28***	0.24***	0.35***	--	
7.	Gender (0 = men, 1 = women)	0.04	0.06	0.10**	−0.05	−0.06	−0.17***	--
8.	Age	0.05	0.05	0.04	0.14***	0.10**	−0.10**	−0.07*

*N = 868. *p < 0.05; **p < 0.01; ***p < 0.001.*

nostalgia-proneness measures and collectivism dimensions remained significant, when controlling for individualism dimensions. To be precise, the SNS was significantly correlated with horizontal collectivism (pr = 0.17, $p < 0.001$) and vertical collectivism (pr = 0.21, $p < 0.001$), and the NI was also significantly correlated with horizontal collectivism (pr = 0.21, $p < 0.001$) and vertical collectivism (pr = 0.24, $p < 0.001$). Next, we tested the partial correlation of each nostalgia-proneness measure with each individualism dimension, controlling for the collectivism dimensions. The SNS was not significantly associated with horizontal individualism (pr = 0.01, p = 0.751) or vertical individualism (pr = −0.02, p = 0.566), when controlling for collectivism dimensions. The NI was not significantly correlated with horizontal individualism (pr = −0.03, p = 0.470) or vertical individualism (pr = 0.04, p = 0.226) either.

Finally, we examined correlations with demographic variables. Neither gender nor age was significantly correlated with either measure of nostalgia proneness. Women evinced significantly higher vertical collectivism scores and lower vertical individualism scores than men. Older (compared to younger) individuals scored significantly higher on vertical collectivism and horizontal individualism and lower on vertical individualism. When we controlled for age and gender (in partial-correlation analyses), the correlations of both nostalgia measures with both collectivism dimensions were practically identical.

A key limitation of Study 1 concerns the exclusive focus on relational collectivism. This raises the question whether Study 1 findings can be replicated conceptually when collectivism is assessed in terms of one's identification with more abstract, larger social entities. We tested this possibility in Study 2.

STUDY 2

In Study 2, we examined the relation between nostalgia proneness and group collectivism. We assessed group collectivism in terms of participants' identification with their national ingroup.

Method

Participants

We tested 202 University of Thessaly students, who took part for extra course credit. We excluded four students because they were not Greek citizens, and six students because they did not complete all measures. The final sample comprised 192 individuals (188 women and 4 men), ranging in age from 18 to 40 years (M = 21.09, SD = 3.94).

Procedure and Materials

Participants responded to the materials individually, on a computer. As in Study 1, we assessed nostalgia proneness with the SNS (Barrett et al., 2010; α = 0.91, M = 5.04, SD = 1.13) and NI (Batcho, 1995; α = 0.87, M = 4.38, SD = 1.04). We assessed national identification with Leach et al. (2008) 14-item ingroup identification scale, which participants filled out in reference to their Greek nationality (1 = *strongly disagree*, 7 = *strongly agree*). The ingroup identification scale comprises two facets. (1) Group-level self-definition captures the degree to which individuals see themselves as similar to the ingroup prototype (i.e., self-stereotyping) and perceive ingroup members as similar to each other (i.e., in-group homogeneity). (2) Group-level self-investment encapsulates individuals' positive feelings about their ingroup membership (i.e., satisfaction), the strength of their bond with the ingroup (i.e., solidarity), and the importance they ascribe to their ingroup memberships (i.e., centrality). We averaged across the relevant items to create indices of self-definition (e.g., "I have a lot in common with the average Greek person"; α = 0.89, M = 4.48, SD = 1.29) and self-investment (e.g., "I am glad to be Greek"; α = 0.89, M = 4.96, SD = 1.13).

Results and Discussion

We present correlations between measured variables in **Table 2**. We did not include gender in the correlation matrix, because the sample included few men (n = 4). As hypothesized, both measures of nostalgia proneness were significantly and positively related to both group-level self-definition and group-level self-investment. Older participants scored lower on nostalgia (but age range was limited in this student sample). When we controlled for age (in partial correlation analyses), the correlations of SNS scores with self-definition (pr = 0.22, p = 0.003) and self-investment (pr = 0.20, p = 0.007) remained significant, as did the correlations of NI scores with self-definition (pr = 0.16, p = 0.028) and self-investment (pr = 0.26, $p < 0.001$).

Study 1 revealed that nostalgia proneness is associated with higher relational collectivism. Study 2 conceptually replicated and extended this finding by demonstrating that nostalgia proneness is also linked with higher group collectivism, as reflected in the strength of ingroup identification.

GENERAL DISCUSSION

Summary of Findings

Extant evidence has tied nostalgia proneness to a stronger preference for engaging in activities with others (Batcho, 1998), increased empathy (Cheung et al., 2017a; Juhl et al., 2020; Newman et al., 2020), and greater emphasis on intimacy maintenance versus bitterness revival (Cheung et al., 2018).

TABLE 2 | Correlations among nostalgia proneness, group-level self-definition, group-level investment, and age in Study 2.

S. No.	Measure	1	2	3	4
1.	Nostalgia proneness (SNS)	--			
2.	Nostalgia proneness (NI)	0.53***	--		
3.	Group-level self-definition	0.23**	0.17*	--	
4.	Group-level self-investment	0.21**	0.27***	0.60***	--
5.	Age	–0.17*	–0.12	–0.10	–0.10

*N = 192. *p < 0.05; **p < 0.01; ***p < 0.001.*

The present findings tighten further this nomological net around nostalgia proneness. Our point of departure was Brewer and Chen's (2007) influential distinction between relational and group collectivism. Whereas relational collectivism involves self-definition in terms of one's bonds to close others and small social networks, group collectivism denotes self-definition in terms of one's membership in larger social groups or categories.

In Study 1, we examined the association of nostalgia proneness with relational collectivism (and individualism). This study further included a cross-cutting distinction between horizontal (i.e., emphasizing similarities between oneself and others) and vertical (i.e., emphasizing hierarchies and differences between oneself and others) orientations (Singelis et al., 1995; Triandis and Gelfand, 1998). Zero-order and partial correlations (controlling for individualism) revealed that high-nostalgia (compared to low-nostalgia) individuals scored higher on measures of horizontal and vertical collectivism. Zero-order correlations between nostalgia proneness and the individualism measures were small and rendered non-significant when we controlled for collectivism (in partial-correlation analyses). Study 2, in turn, demonstrated a link between nostalgia proneness and group collectivism, as reflected in two aspects of (national) ingroup identification: group level self-definition (i.e., the degree to which individuals see themselves as similar to the ingroup prototype and perceive ingroup members as similar to each other) and group level self-investment (i.e., the extent to which individuals value the ingroup and their membership in it). Across both studies, independent assessments of nostalgia proneness (SNS and NI) produced convergent support for the conclusion that high-nostalgia (compared to low-nostalgia) individuals are more likely both to emphasize the importance of maintaining tightly knit networks of interpersonal relationships, including the attendant rights and responsibilities (relational collectivism), and to value, identify with, and promote the collective welfare of more abstract, larger social groups (group collectivism). The magnitude of these relations (Study 1: r range = 0.19 to 0.26; Study 2: r range = 0.17 to 0.27) is typical for social and personality psychology research (Gignac and Szodorai, 2016; Funder and Ozer, 2019).

Limitations and Future Directions

Our studies were correlational and, hence, did not allow us to examine direction of causality. However, prior research is consistent with the possibility of a bi-directional relation between collectivism and nostalgia proneness. Collectivism entails a strong need to belong (Bond and Smith, 1996; Suh, 2007) and there is now strong evidence that experimentally induced belongingness deficits, which heighten the need to belong (Hackenbracht and Gasper, 2013), lead to increased nostalgia (Zhou et al., 2008; Wildschut et al., 2010; Seehusen et al., 2013; Abakoumkin et al., 2017). Thus, collectivism may cause nostalgic reverie. Nostalgia, in turn, serves a compensatory role, assuaging the need to belong by strengthening social connectedness (for a review, see Sedikides and Wildschut, 2019). By so doing, nostalgia can increase the importance and strength of relational and group bonds. For example, discussing a shared nostalgic (vs. ordinary) memory with a close other (i.e., partner, friend, or family member) increases relationship positivity, intimacy, support, and mutual disclosure (Hepper et al., 2012b). Likewise, reflecting on nostalgic (vs. ordinary) events shared with other members of one's university or national ingroup increases positive ingroup evaluations, charitable intentions toward the ingroup, and personal sacrifice for the ingroup (Wildschut et al., 2014), as well as ingroup bias in the evaluation of domestic and foreign consumer products (Dimitriadou et al., 2019). These findings point to a causal path from nostalgia to relational and group collectivism, particularly when one's nostalgia pertains to, or is shared within, the collective in question. Explicating the bi-directional causal paths between nostalgia and (relational as well as group) collectivism presents a fruitful direction for research.

Another unresolved question is whether nostalgia proneness, through its positive association with group collectivism, is linked to increased prejudice and ethnocentrism. To understand the nuanced picture emerging from extant findings, two issues deserve careful consideration. First, it is important to distinguish between nostalgia for experiences from one's personal past (i.e., the focus of our present studies) and nostalgia for the ostensibly glorious past of one's group (e.g., national nostalgia). Proneness to nostalgia for one's personal past is negatively correlated with prejudice against outgroups (Smeekes, 2015; Cheung et al., 2017a), and recalling a personally nostalgic (compared to ordinary) experience with a specific outgroup member reduces prejudice toward the entire outgroup (Turner et al., 2012, 2013, 2018). By contrast, nostalgia for the past of one's group (e.g., "How often do you long for the good old days of the country?") has been linked with higher prejudice, national glorification, and anger toward outgroups (Smeekes, 2015; Smeekes et al., 2015, 2018; Cheung et al., 2017b; Baldwin et al., 2018). Yet, findings by Martinovic et al. (2017) raise a second issue that requires attention, pertaining to the referent of nostalgia. Their findings indicate that, under certain circumstances, nostalgia for the collective past is associated with improved outgroup attitudes. Participants from former Yugoslavia rated their nostalgia for the Yugoslavia of the past (e.g., "I get nostalgic when I think back to Yugoslavia in the past times") and then indicated their level of contact with members from different ethnic subgroups from former Yugoslavia (Bosniaks, Serbs, and Croats). Nostalgia for the superordinate group, Yugoslavia, predicted increased contact between ethnic subgroups. Furthermore, political orientation might affect the referent of nostalgia. For example, political conservatives might be more prone than political liberals to nostalgize about the "good old days of a country" and thereby identify with this country. Clarifying the precise circumstances under which nostalgia proneness, in its different guises, is either positively or negatively associated with outgroup prejudice presents a challenge for future research.

Coda

High-nostalgia (compared to low-nostalgia) individuals attach great value and significance to establishing, protecting, and enhancing close-knit interpersonal relationships, as well as to

maintaining the integrity, and promoting the interests, of more abstract, larger groups and social categories. As history indicates, these pursuits can be the source of both great happiness and intense suffering. The present findings mark a step along the path to understanding these profound and sometimes contradictory implications of nostalgia proneness and human sociality.

DATA AVAILABILITY STATEMENT

The datasets presented in Study 1 can be found in online repositories. The names of the repository/repositories and accession number(s) can be found at: www.surveydata.nl/liss-panel-data-archive. The datasets presented in Study 2 are available on request to the corresponding author.

ETHICS STATEMENT

Study 1, which involved human participants, was reviewed and approved by University of Southampton, School of Psychology ethics committee. The treatment of Study's 2 human participants complies with APA ethical standards and with the University of Thessaly Code of Conduct. The patients/participants in both studies provided their written informed consent to participate in these studies.

AUTHOR CONTRIBUTIONS

GA, TW, and CS conceptualized the studies (theory, hypotheses, and design). TW conducted Study 1 and GA conducted Study 2. GA and TW wrote drafts of the manuscript. CS provided feedback and revised the drafts. All authors contributed to the article and approved the submitted version.

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This Won't Last Forever: Benefits and Costs of Anticipatory Nostalgia

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What helps consumers extract the greatest happiness from their experiences? The current investigation is the first to introduce to the consumer literature the construct of anticipatory nostalgia, defined as missing aspects of the present before they vanish in the future. While personal nostalgia involves fond memories and longing for what has already been lost, anticipatory nostalgia involves missing what has not yet been lost. In four studies, we show that marketing communications can elicit anticipatory nostalgia, and this emotion can either enhance or reduce consumer enjoyment of the experience, depending on the experience valence or the individual's level of life satisfaction. Specifically, mediated by anxiety, anticipatory nostalgia decreased enjoyment and positive affect in pleasant situations, but it enhanced enjoyment and affect in unpleasant circumstances. Study 4 extended the paradigm to a real-life setting and showed that the impact of anticipatory nostalgia on enjoyment and meaningfulness can last as long as 8 h after the manipulation.

Keywords: anticipatory nostalgia, personal nostalgia, enjoyment, anxiety, affect

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INTRODUCTION

People frequently feel nostalgic for their past. But can they feel nostalgic for their present? What if people become aware in the moment that the present will be missed 1 day in the future? Knowing that the present will be missed presents a unique opportunity to feel nostalgic, as if the present is experienced as prematurely past. This paper introduces to the consumer literature the construct of anticipatory nostalgia, which is defined as missing aspects of the present before they are gone. Whereas personal nostalgia is a longing for what has already been lost, anticipatory nostalgia involves a longing for what has not yet been lost (Batcho and Shikh, 2016). At one time or another, likely more so in momentous life experiences (e.g., graduations, holidays, anniversaries), people can be struck by feelings of anticipatory nostalgia, as exemplified by the words of singer Trace Adkins, "You may not know it now, but you're gonna miss this"(Gorley and Miller, 2007). People may also initiate anticipatory nostalgia on tough days (e.g., caring for ill relative, breakup in a relationship) so that they can make the present moment easier to live with. When the whole world was struggling with the 2020 epidemic, we find a blog titled "COVID-19 lockdown nostalgia: It was a scary time, but I will miss our enforced family togetherness" (Dietitian Farida, 2020).

What is the consequence of bringing nostalgia into the present? Will anticipatory nostalgia sweeten the present with the soft glow of reminiscence? Or will it dilute the present enjoyment by considering it already gone? This paper aims to investigate whether anticipatory nostalgia elevates or impoverishes consumer experience. Our findings provide relevant insights into how to enhance consumer experiences. What can companies do to help consumers extract the greatest happiness from an experience? While existing research provides little guidance about how to maximize consumer enjoyment from an experience, companies sometimes use promotion communication that can trigger anticipatory nostalgia. For example, Kodak ads included the messages "life's little moments don't stay forever" and "don't cry over missed special moments." Disney used the taglines "let the memories begin" and "unforgettable happens here." An ad about global warming warned "winter, you will miss it when it's gone." These marketing communications can elicit anticipatory nostalgia. But how can this affect consumer experience? Will we live better or worse as a result of such messaging?

NOSTALGIA AND ANTICIPATORY NOSTALGIA

Although specific definitions of nostalgia vary, personal nostalgia is commonly understood to denote currently missing aspects of one's lived past (Batcho, 1995, 2013a). Definitions of nostalgia as "a sentimental longing or wistful affection for the past" (Sedikides et al., 2015a, p. 52; Sedikides et al., 2015b, p. 195) and as "missing or longing for something in the past" (Batcho, 1995) share the common element of longing for the past. Definitions that include the component of affection for the past often qualify it with descriptors such as "wistful," that is, "characterized by melancholy, longing or yearning." Both theoretical approaches conceptualize personal nostalgia as a blended bittersweet emotion. In prior research based upon the two definitions, personal nostalgia has been associated with a number of psychological benefits, including enhanced consumer patience (Huang et al., 2016), social connectedness (Werman, 1977; Batcho, 1998; Wildschut et al., 2006, 2010; Zhou et al., 2008), social competence and relationship satisfaction (Juhl et al., 2012), continuity of self (Iyer and Jetten, 2011; Sedikides et al., 2015a), identity exploration (Batcho et al., 2008), self-esteem (Vess et al., 2012; Cheung et al., 2013), meaningfulness (Sedikides et al., 2004; Batcho, 2007; Routledge et al., 2008), and social-emotional coping, goal-directed strategies, and positive reframing (Batcho, 2013b). Although nostalgia is believed to be universal, research suggests that its benefits might vary as a function of traits such as neuroticism, neuro-excitability for sadness, and narcissism (Barrett et al., 2010; Köneke, 2010; Hart et al., 2011), as well as habitual worrying (Verplanken, 2012), the belief in identity continuity (Iyer and Jetten, 2011), or social support (Wildschut et al., 2010).

Another recent approach has raised the possibility that the impact of nostalgia might depend upon the time perspective governing the emotion. What if aspects of the present are missed as if they were already past? Recent research has introduced the construct of anticipatory nostalgia, in reference to a tendency to miss elements of the present before they are past by imagining them from a future vantage point (Batcho and Shikh, 2016).

Anticipatory nostalgia, defined as missing the present prematurely before it has become past, has been distinguished from personal nostalgia, which is a psychological state of missing and longing for what has already been lost (Batcho and Shikh, 2016; Batcho, 2020). Although correlated, anticipatory and personal nostalgia were found to constitute separate types of nostalgia. Whereas personal nostalgia was associated with remembering the past, positive affect, and favorable reactions, anticipatory nostalgia was aligned with thinking of the future, emotional distancing, difficulty enjoying the present, and a greater tendency to sadness and worry (Batcho and Shikh, 2016).

By definition, when anticipatory nostalgia is primed, an imagined future may create a conflict between an actual present and a hypothetical future. With the "someday past" still present, anticipatory nostalgia is contingent upon first mentally creating the condition that gives rise to the missing element(s). Cognitively complex, anticipatory nostalgia involves the experience of the present, an imagined future, and an imagined future past (Batcho and Shikh, 2016; Batcho, 2020).

Anticipatory nostalgia should not be confused with anticipated nostalgia. Anticipated nostalgia is the prediction or expectation that one will feel nostalgic for an aspect of the present in the future, not feeling nostalgic in the present (Cheung et al., 2020). Predicting future nostalgia is an interesting cognitive process but not identical to the emotional phenomenon of feeling nostalgic before the future loss occurs. A person can expect to miss a loved one when they leave or die someday, but the expectation doesn't necessarily include the emotional component of nostalgic missing. Expecting future nostalgia has been shown to predict nostalgia after an important life transition and to be associated with greater savoring of the experience. Post-transition nostalgia was associated with benefits, including enhanced self-esteem, social connectedness, and meaning in life (Cheung et al., 2020). The finding of a greater likelihood of expecting future nostalgia for more positive experiences is not surprising. People would be more likely to expect to miss enjoyable or meaningful events. The line of research by Cheung et al. (2020) reporting positive outcomes of future oriented nostalgia has identified benefits of expecting to be nostalgic in the future, rather than being nostalgic for what has not yet been lost.

ANTICIPATORY NOSTALGIA AND CONSUMER EXPERIENCES

To date, anticipatory nostalgia has been assessed and explored as a dispositional trait. Research suggests that people prone to anticipatory nostalgia are more likely to experience difficulty enjoying the present and have a greater tendency to worry (Batcho and Shikh, 2016). It is not yet known whether such difficulties characterize anticipatory nostalgia experienced as a passing mood state. Does knowing that the present will be missed 1 day help us appreciate it more deeply or perceive it

as more meaningful? Or does it rob the present of pleasure by considering it already gone? Does envisioning its future loss also decrease enjoyment of the present by generating anxiety about an uncertain future?

What impact does an individual's activation of anticipatory nostalgia have on their current experience? On this issue, existing research has not reached a clear conclusion. Batcho and Shikh (2016) found that positive PANAS intensity was not related to dispositional anticipatory nostalgia; however, negative PANAS intensity was significantly positively related to dispositional anticipatory nostalgia. Meanwhile, regression analyses after adding personal nostalgia traits and other social personality traits found that anticipatory nostalgia predicted sadness and worry. Although it appears that anticipatory nostalgia is more associated with negativity, Batcho and Shikh (2016) also found that people in negative situations (compared to positive situations) show a stronger tendency to view the present from a future perspective, which is characteristic of anticipatory nostalgia, suggesting that anticipatory nostalgia is likely a response to negative situations and that activating anticipatory nostalgia may mitigate negative emotions in a situation. However, the positive or negative effects that activating anticipatory nostalgia can have on an individual's emotions, and the conditions under which the effects arise, have not been clearly established in previous research.

Batcho and Shikh (2016, p. 78) have made a conjecture based on reasoning that the effect of anticipatory nostalgia may vary depending on the valence of emotional state of the present, but they did not collect empirical evidence to test it. The main basis for their reasoning is that anticipatory nostalgia encompasses both a present experience and a future time perspective, which leads to a conflict between a real present and an imagined future (Batcho and Shikh, 2016). The existence of this temporal perspective difference was consistent with their findings (Batcho and Shikh, 2016). The present study is specifically concerned with whether the consequences of this perspective difference will vary depending on the current contextual valence of the situation.

On the one hand, anticipatory nostalgia may hurt consumer experience, as it entails a conflict between an actual present and an imagined future (Batcho and Shikh, 2016). Imagining an abstract future might generate anxiety associated with uncertainty and worry about the ability to cope with loss and change. Research has shown that consumers who make predictions about uncertain events enjoy observing those events significantly less than those who do not make predictions (Mandel and Nowlis, 2008). Considering uncertain outcomes can decrease enjoyment by producing anticipated regret, and enjoyment is decreased to the extent that outcomes are perceived as more uncertain. Anticipatory nostalgia would be expected to decrease enjoyment by making salient the future uncertainty. Moreover, anticipatory nostalgia may decrease enjoyment by interfering with living fully in the moment. Envisioning the present from a future perspective might prevent one from being mindful of the present and savoring the moment. Mindfulness is a state of bringing one's attention to experiences occurring in the present moment, during which one is fully aware of what is taking place and immersed in the present (Brown and Ryan, 2003). Mindfulness practices are effective in enhancing life satisfaction, decreasing mood disturbance, and reducing stress and anxiety (Barnes et al., 2007; Querstret and Cropley, 2013; Gu et al., 2015). Research has also identified high involvement or total absorption in an activity to be an important determinant of the subjective experience of leisure (Unger and Kernan, 1983). Because being mindful of the present reduces anxiety and enhances experience, anticipatory nostalgia can diminish the pleasure of an experience by reducing mindfulness and provoking anxieties.

On the other hand, anticipatory nostalgia may enhance consumer experience by making consumers feel that the present is fleeting, thus increasing the perceived value of the present. One study showed that college seniors appreciated their college experience more when they were led to see that they had little time (vs. lots of time) left to enjoy it (Kurtz, 2008). Young people report greater happiness for extraordinary experiences than ordinary ones, whereas happiness from ordinary experiences increases as people get older and perceive their future as less extensive. Such findings suggest that happiness is more intense when an experience is perceived as unlikely to reoccur (Bhattacharjee and Mogilner, 2014). Research has also shown that savoring a nostalgic experience by trying to prolong it can increase consumer patience (Huang et al., 2016). Consumers facing uncertainty connected to a positive event can experience greater, longer-lasting positive feelings when they imagine possible favorable outcomes (Lee and Qiu, 2009). Building on this line of research, we predict that anticipatory nostalgia may enhance experiences by making them more valuable in the moment.

To summarize, previous research and theories seem to suggest that by bringing the future into the present, anticipatory nostalgia can either enhance or diminish consumer experiences of the present. Drawing together these and other diverse lines of evidence showing that both types of effects are possible, we consider the determinants and postulate that the effect of anticipatory nostalgia on consumer experience is dependent on a contextual factor: experience valence. On the one hand, bringing the future into a positive present may hurt the experience. To enjoy a positive experience to its fullest, one needs to be immersed in it and pay full attention to it. Thus, during a positive experience, thinking of the imminent future that is full of uncertainties will provoke anxiety, which will in turn reduce enjoyment of the experience. However, if the experience is negative, shifting attention to the future might remind people that the present is valuable in spite of its difficulties and allow for benefits such as appreciation and reappraisal of the present. Cognitive reappraisal is a positive coping strategy that can reduce stress and anxiety during negative events (Kivity et al., 2016). Therefore, bringing the future into the negative present can prevent ruminating on negative aspects and reduce anxiety, which in turn enhances consumer experience. We put forth the following set of hypotheses:

H1.1. Anticipatory nostalgia reduces consumer enjoyment during a positive experience.

H1.2. During a positive experience, anticipatory nostalgia's negative influence on the consumer enjoyment is mediated by anxiety.

H2.1. Anticipatory nostalgia enhances consumer enjoyment during a negative experience.
H2.2. During a negative experience, anticipatory's positive influence on the consumer enjoyment is mediated by anxiety.

THE PRESENT RESEARCH

We had three particular aims with the current research. First, we aimed to test whether anticipatory nostalgia can reduce people's enjoyment of an experience (H1.1). Our second aim was to examine the potential for anticipatory nostalgia to harm the enjoyment of an experience, depending on the valence of experience (H1.1 and H2.1). Our third aim was to examine the possible mechanism of anticipatory nostalgia's influence on enjoyment of an experience (H1.2 and H2.2).

In order to identify the benefits or disadvantages of anticipatory nostalgia, an assessment method is needed to launch empirical investigations of its functions and correlates. Although the Survey of Anticipatory Nostalgia has shown promise as a measure, it serves to assess dispositional anticipatory nostalgia (Batcho and Shikh, 2016). The present research introduces a transient state measure of anticipatory nostalgia to examine dynamics underlying the impact of premature nostalgia for the present before it becomes the past. The pilot study verified the internal reliability of the measurement of transient state measure of anticipatory nostalgia and distinguished it from the measurement of state personal nostalgia.

By using the transient state measure for anticipatory nostalgia, 4 studies were conducted in the present research. In study 1 we asked individuals to imagine a trip to Disneyland and manipulated anticipatory nostalgia with an advertising slogan. A sample of 120 university students participated in an imaginary trip to Disneyland. We examined the effect of anticipatory nostalgia on consumer enjoyment (H1.1). In study 2 we asked participants to imagine celebrating their birthday, and anticipatory nostalgia was manipulated with a camera advertisement. We studied the effect of nostalgia on consumer enjoyment, and the possible mechanism underlying the effect (H1.1 and H1.2). In study 3 we introduced experience valence as a moderating variable to look at how diverging effects of anticipatory nostalgia can emerge in experiences with different valence (H1.1, H1.2, H2.1, and H2.2). Study 4 extended the paradigm to a real-life setting and assessed the impact of anticipatory nostalgia on enjoyment and meaningfulness 8 h after the manipulation as a function of life satisfaction.

STUDY 1

Study 1 manipulated state anticipatory nostalgia to investigate its impact on enjoyment and general affect. Companies selling an experience (such as Disneyland) sometimes use promotional communications that can trigger anticipatory nostalgia to enhance consumer experience. However, according to present research, this kind of advertisement may inadvertently reduce consumer enjoyment. Study 1 tested our hypothesis that activating anticipatory nostalgia may reduce enjoyment. We examined the unintended effect of such communication on consumer enjoyment, as well as positive and negative affect.

Materials and Methods

Participants

Participants were 120 students at a large public university ranging in age from 18 to 32 years (51.7% female; M_{age} = 22.2, SD_{age} = 2.34). Students received a small monetary stipend for their participation. They were randomly assigned to either the anticipatory-nostalgia condition or the control condition.

Procedure and Materials

Anticipatory nostalgia

A four-item self-report measure of state anticipatory nostalgia was constructed, guided by the content in the dispositional Survey of Anticipatory Nostalgia (Batcho and Shikh, 2016). The items focused on participants' nostalgia for anticipated future loss of aspects of the present: "Right now, I know that the present will be missed some day," "In the future, I will get nostalgic about aspects of my life now," "In the future, I will often think about things that are happening right now," and "I expect that I will miss my current lifestyle." To ensure that the items assessed anticipatory nostalgia as a state, respondents were instructed: "Please rate the following items based on how you feel right now." Agreement with each of the four statements was indicated on a 7-point scale (1 = "strongly disagree," 7 = "strongly agree").

To confirm the reliability of the measure of anticipatory nostalgia and its relationship with personal nostalgia, we recruited a sample of 100 United States participants through Amazon's Mechanical Turk (MTurk) marketplace for the payment of 0.5 USD. Three respondents failed the attention-check task, resulting in a final sample of 97 adults ranging in age from 20 to 70 years (M_{age} = 36.53, SD_{age} = 10.55, 60% male). Besides the state measures of anticipatory nostalgia, respondents also completed state measures of personal nostalgia (Wildschut et al., 2006) and self-continuity (Sedikides et al., 2015a), and dispositional measures of construal level (Vallacher and Wegner, 1987), self-esteem (Rosenberg, 1965), sense of power, arousal seeking (Goukens et al., 2009), and socioeconomic status (SES).

The descriptive statistics for the four anticipatory nostalgia items are displayed in **Table 1**. Principal components factor analysis of this scale yielded a one-factor solution (based on examination of the scree plot as well as Kaiser's rule that only factors with eigenvalues greater than 1 are extracted). The eigenvalue for factor 1 was 3.16. This single unobserved factor accounted for 79.02% of the variance in the four items. The four items were averaged to form a composite measure to delineate the sample characteristic confounding effects (Wainer, 1976; Dawes, 1979). The correlation between items combined using factor weights and items combined using unit weights was r = 1.0. The coefficient for the composite measure was 0.91. One-factor solutions were obtained for female and male participants.

Further, principal components factor analysis of anticipatory nostalgia and personal nostalgia scales yielded a two-factor solution (based on examination of the scree plot as well as Kaiser's rule that only factors with eigenvalues greater than

TABLE 1 | Inter-item correlation, means, and SDs of measures of anticipatory nostalgia.

Variables	1	2	3	4	Corrected item-total correlation
1. Right now, I know that the present will be missed some day	–				0.90
2. In the future, I will get nostalgic about aspects of my life now	0.79**	–			0.92
3. In the future, I will often think about things that are happening right now	0.73**	0.76**	–		0.88
4. I expect that I will miss my current lifestyle	0.69**	0.72**	0.64**	–	0.86
M	6.19	6.11	5.74	5.69	
SD	1.20	1.27	1.33	1.40	

$^{**}p < 0.01$.

TABLE 2 | Rotated component matrix[a] of anticipatory nostalgia and nostalgia measures.

	Component	
	Factor 1	Factor 2
Anticipatory Nostalgia: Right now, I know that the present will be missed some day	0.902	
Anticipatory Nostalgia: In the future, I will get nostalgic about aspects of my life now	0.892	
Anticipatory Nostalgia: In the future, I will often think about things that are happening right now	0.819	
Anticipatory Nostalgia: I expect that I will miss my current lifestyle	0.852	
Nostalgia: Right now, I am feeling quite nostalgic (for the past)		0.958
Nostalgia: Right now, I am having nostalgic thoughts (for the past)		0.959
Nostalgia: I feel nostalgic (for the past) at the moment		0.936

Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization.
a. Rotation converged in 3 iterations.

1 are extracted). The eigenvalue for factor 1 was 4.26, and for factor 2 the eigenvalue was 1.76. The first unobserved factor accounted for 60.88% of the variance, and the second factor accounted for 25.19% of the variance. The rotated component matrix demonstrated that anticipatory nostalgia loaded on the first factor, and personal nostalgia loaded on the second factor (**Table 2**). This analysis showed that the state measure of anticipatory nostalgia was a construct distinct from personal nostalgia.

Consistent with existing research on personal nostalgia, we found that anticipatory nostalgia was not correlated significantly with gender or SES (Anderson et al., 2012b). As expected, the new measure of anticipatory nostalgia correlated positively with measures of personal nostalgia and self-continuity (**Table 3**). Also consistent with predictions, our results showed that self-esteem, arousal seeking, and sense of power were not correlated with anticipatory nostalgia. Contextual effects could account for the absence of a correlation between the transient measure of anticipatory nostalgia and the dispositional measure of construal level. In general, anticipation might encourage more abstract construal (Vallacher and Wegner, 1987), resulting in greater psychological distance from the present. However, construal level might depend upon context, with abstract construal more attractive in pleasant situations than in unpleasant ones (Labroo and Patrick, 2009). In summary, the four-item, self-report anticipatory nostalgia survey proved to be a coherent, internally consistent measure.

Procedure

Study 1 examined whether marketing communications promoting an experience can elicit anticipatory nostalgia, and we tested the effect of such communication on consumer enjoyment, as stated in hypothesis 1.

All participants were instructed to imagine that they went to Disneyland for a weekend. They were asked to imagine the specific activities they were doing there and how much fun they were having. Participants worked at their own pace, with no time constraints. Following the imagination exercise, participants were presented with one of two versions of an advertisement for Walt Disney World Resort Annual Passholder webpage (see figure on https://thedisneyblog.com/2011/09/15/disney-world-annual-pass-advertisement/). The original slogan on the advertisement was removed, and participants in the anticipatory-nostalgia condition saw an advertisement with the slogan "You will miss this moment when it's gone." Those in the control condition saw the same advertisement without the slogan. Participants imagined that they saw this advertisement when they were in Disneyland. They were asked to evaluate the ad for attractiveness and beauty on a 7-point scale (1 = "not at all," 7 = "very much").

Next, participants were asked to evaluate their imaginary Disneyland experience by rating how much they enjoyed themselves, how happy they were, how much fun they had, and how involved they were on a 7-point scale (1 = "not at all" 7 = "very much"). These items were adapted from previous research measures of consumer enjoyment (Nowlis et al., 2004; Mandel and Nowlis, 2008; Miller et al., 2008). The average ratings for the four items comprised a composite score of enjoyment (α = 0.86). Participants then completed a measure of their current affect, the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). The PANAS consists of 10 items assessing positive affect (PA) with descriptors such as "interested" and "enthusiastic" (α = 0.92) and 10 items assessing negative affect (NA) with descriptors such as "distressed" and "upset" (α = 0.88). Items were rated on a 5-point scale (1 = "very slightly or not at all," 5 = "extremely").

Finally, participants completed the transient state anticipatory nostalgia measure developed in the pilot study, with responses averaged to yield a composite index of state anticipatory nostalgia (α = 0.91), followed by the three manipulation-check items for state personal nostalgia (Wildschut et al., 2006). Responses to the three items were averaged to provide an

TABLE 3 | Descriptive statistics and correlations of measures.

Variables	1	2	3	4	5	6	7	8	9	10
1. Anticipatory nostalgia	–									
2. Nostalgia (Wildschut et al., 2006)	0.42**	–								
3. Self-continuity Index (Sedikides et al., 2015a)	0.59**	0.43**	–							
4. Arousal-seeking Tendency (Goukens et al., 2009)	0.08	0.08	0.10	–						
5. Sense of power (Anderson et al., 2012a)	0.09	−0.15	0.04	0.18	–					
6. Self-esteem (Rosenberg, 1965)	0.13	−0.15	0.11	0.04	0.53**	–				
7. Construal level (Vallacher and Wegner, 1987)	0.16	0.02	0.17	0.11	0.17	0.19	–			
SES	0.03	−0.05	−0.10	0.25*	0.44**	0.26*	0.13	–		
Age	−0.01	−0.13	0.10	−0.29**	−0.06	0.20	0.09	−0.12	–	
Gender	0.03	0.03	0.02	−0.06	0.18	−0.00	0.11	0.04	0.15	–
M	5.92	4.24	5.60	2.42	5.41	4.72	1.60	4.93	36.53	—

***Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).*

index of personal nostalgia (α = 0.83). Participants also reported their age and gender.

Results

Manipulation Checks

To confirm that the manipulation of anticipatory nostalgia was successful, average anticipatory-nostalgia scores were analyzed in an independent *t*-test. Confirming that the anticipatory-nostalgia manipulation was effective, participants in the anticipatory-nostalgia condition reported feeling more anticipatory nostalgia (M = 4.90, SD = 1.41) than did their counterparts in the control condition [M = 3.95, SD = 1.68; $t(118) = -3.37$, p = 0.001, d = 0.61].

To confirm that the anticipatory-nostalgia manipulation did not influence the level of personal nostalgia, participants' self-reported nostalgia scores were analyzed in an independent *t*-test. As expected, personal-nostalgia scores for the anticipatory condition (M = 5.28, SD = 1.02) did not differ from those for the control condition [M = 5.41, SD = 1.25; $t(118) = 0.64$, p = 0.522, d = 0.12], suggesting that the manipulation did not affect personal nostalgia. Meanwhile, the correlation coefficient of anticipatory and personal nostalgia was non-significant, $r(120) = 0.17$, p = 0.060.

Ratings of attractiveness, $t(118) = 0.55$, p = 0.582, d = 0.097, and beauty, $t(118) = 0.68$, p = 0.499, d = 0.12, of the advertisement did not differ between the two groups, suggesting that ad attractiveness was not the driving force behind the main findings.

Enjoyment

The average ratings of enjoyment (α = 0.86) were analyzed in an independent *t*-test. Consistent with our prediction, participants in the anticipatory-nostalgia condition felt less enjoyment (M = 3.84, SD = 1.52) than did those in the control condition [M = 4.64, SD = 1.52; $t(118) = 2.89$, p = 0.005, d = 0.53]. Exposure to an advertisement that elicited anticipatory nostalgia reduced participants' enjoyment of the experience. Consistent with this result, participants' enjoyment level was negatively correlated with their anticipatory-nostalgia score [$r(120) = -0.248$, p = 0.006]. The more anticipatory nostalgia participants felt, the less enjoyment they tended to have.

Positive and Negative Affect

The researchers further examined positive (α = 0.92) and negative (α = 0.88) emotions on the PANAS scale. The results were consistent with the hypothesis of a decrease in enjoyment, with less positive emotions (M = 2.89, SD = 1.02) expected in the anticipatory nostalgic group than in the control group [M = 3.42, SD = 0.92; $t(118) = 3.03$, p = 0.003, Cohen's d = 0.55], and higher negative emotions in the nostalgia group (M = 1.53, SD = 0.59) than those in the control group [M = 1.23, SD = 0.44; $t(118) = -3.10$, p = 0.002, Cohen's d = 0.57]. To conclude, the subjects who were primed for anticipatory nostalgia (compared to the control group) in the positive situation felt less positive emotions and more negative emotions. The results of the PANAS analysis were consistent with the findings on enjoyment.

Discussion

Contrary to theories that posit a favorable impact of anticipation (Mandel and Nowlis, 2008), exposure to an advertisement with an anticipatory-nostalgia slogan intended to enhance consumers' experience decreased enjoyment and general positive affect. Consistent with hypothesis 1.1, the present results support the unfavorable impact of anticipated nostalgia. However, study 1 leaves several questions unanswered. What force drives the reduced enjoyment and positive affect? Can the result be generalized to other triggers of anticipatory nostalgia and other contexts? Study 2 addresses these questions.

STUDY 2

In study 1, anticipatory nostalgia reduced enjoyment and general positive affect. The objective of study 2 was to examine the underlying mechanism of this effect (H1.2). Existing research on dispositional anticipatory nostalgia suggests that anticipatory nostalgia arouses anxiety, which is provoked by bringing an uncertain future into the present. Study 2 examined whether elevated anxiety reduces enjoyment and positive affect. Also, to determine whether the impact of anticipatory nostalgia generalizes beyond the specific task used in the first study, study

2 employed a different scenario and a different manipulation of anticipatory nostalgia.

Materials and Methods

Participants

Participants were 120 students at a large public university who volunteered in exchange for a small monetary payment (63.3% female; M_{age} = 22.3, SD_{age} = 2.69). They were randomly assigned to either the anticipatory-nostalgia condition or the control condition.

Procedure and Materials

All participants first were asked to imagine that it was their birthday and that they were having a party to celebrate. They were asked to imagine how happy they were at the party, and in detail the specific activities they were engaged in at the party. Participants worked at their own pace, with no time constraints. Participants in the anticipatory-nostalgia condition were then asked to imagine that they saw a camera advertisement on TV with the message, "capture this moment, because you will miss it soon." They were instructed to imagine the feelings this advertisement stirred in them. Those in the control condition were prompted to imagine that they saw a camera advertisement and were asked to relate the feelings this ad stirred in them.

All participants then rated how much they would enjoy their birthday party on the same four items used in study 1. Participants also rated their current emotions on the PANAS as in study 1. Next, participants rated their anxiety level on four items (Marteau and Bekker, 1992): "right now I feel anxious," "I feel nervous," "I am nervous," and "right now I cannot calm myself down." Participants indicated their level of agreement with each of these four statements on a 7-point scale (1 = "strongly disagree," 7 = "strongly agree"). Ratings were averaged across the four items to serve as a composite score of anxiety (α = 0.71). Finally, participants completed the manipulation-check items for transient state anticipatory and personal nostalgia as in study 1 and reported their gender and age.

Results

Manipulation Checks

As in study 1, a composite measure of transient state anticipatory nostalgia was obtained by averaging the four items (α = 0.84). Confirming the effectiveness of the anticipatory-nostalgia manipulation, an independent *t*-test indicated that participants in the anticipatory-nostalgia condition felt more anticipatory nostalgia (M = 4.63, SD = 1.70) than did those in the control condition [M = 3.88, SD = 1.46; $t(118) = 2.63$, $p = 0.010$, $d = 0.48$]. Moreover, the anticipatory-nostalgia manipulation did not influence the level of personal nostalgia [$M_{anticipatorynostalgia} = 5.34$, $SD_{anticipatorynostalgia} = 1.23$; $M_{control} = 5.19$, $SD_{control} = 1.43$; $t(118) = 0.62$, $p = 0.539$, $d = 0.11$], even though personal and anticipatory nostalgia were positively correlated, $r = 0.24$, $p = 0.007$.

Enjoyment

As in study 1, we averaged the four ratings of enjoyment (α = 0.78). Consistent with our prediction, an independent *t*-test revealed that participants in the anticipatory-nostalgia condition felt less enjoyment (M = 3.65, SD = 1.36) than did those in the control condition [M = 4.23, SD = 1.35, $t(118) = -2.33$, $p = 0.022$, d = 0.43]. Again, we found that the anticipatory-nostalgia manipulation reduced participants' enjoyment. Furthermore, participants' enjoyment level was negatively correlated with their anticipatory-nostalgia score [r (120) = −0.313, $p < 0.001$]. The more anticipatory nostalgia participants felt, the less enjoyment they tended to have. Hypothesis 1.1 was validated again.

Positive and Negative Affect

The researchers further examined positive (α = 0.92) and negative (α = 0.88) emotions on the PANAS scale. Participants in the anticipatory-nostalgia condition felt lower levels of positive affect (M = 2.40, SD = 0.86) than did those in the control condition [M = 3.13, SD = 0.96; $t(118) = -4.42$, $p < 0.001$, $d = 0.81$], and higher levels of negative affect (M = 1.54, SD = 0.51) than did those in the control condition [M = 1.32, SD = 0.54; $t(118) = 2.32$, $p = 0.022$, Cohen's $d = 0.42$]. These results were consistent with those in study 1, and with the findings on enjoyment.

Mediation Analyses

To test whether anxiety (α = 0.71) mediated the effects of anticipatory nostalgia on enjoyment, we conducted a simple mediation analysis using 5,000 bias-corrected bootstrap samples with Model 4 of the PROCESS plug-in (Zhao et al., 2010; Hayes, 2013). The results revealed a significant positive effect of anticipatory nostalgia (manipulation condition variable, control = 0, anticipatory nostalgia = 1) on anxiety ($b = 0.80$, $SE = 0.23$, $p < 0.001$, 95% CI [0.33; 1.27]) and a significant negative effect of anxiety on enjoyment ($b = -0.26$, $SE = 0.09$, $p = 0.006$, 95% CI [−0.45, −0.08]). When anxiety was simultaneously examined as a potential mediator for the effect of anticipatory nostalgia on enjoyment, anticipatory nostalgia was no longer significant ($b = -0.36$, $SE = 0.25$, $p = 0.150$, 95% CI [−0.86, 0.13]). More importantly, the indirect effect of anticipatory nostalgia on enjoyment via anxiety was significant ($b = -0.21$, $SE = 0.11$, 95% CI [−0.51, −0.06]). Thus, we found that anticipatory nostalgia enhanced anxiety, which in turn significantly decreased enjoyment. Consistent with our prediction, anxiety completely mediated the effect of anticipatory nostalgia on enjoyment (see **Figure 1**). Thus, Hypothesis 1.2 was validated.

Discussion

Study 2 makes two contributions, the first of which concerns clarification of the mechanism underlying the effect of anticipatory nostalgia. Although companies readily appeal to anticipatory nostalgia in ads intended to enhance consumer experience, they inadvertently can make consumers more anxious, undermining consumer enjoyment and general positive affect. Second, study 2 replicated and extended study 1's findings employing a different manipulation of anticipatory nostalgia and utilizing a different type of experience. Study 2 showed that the effect of anticipatory nostalgia is not merely the by-product of a given manipulation or a given experience.

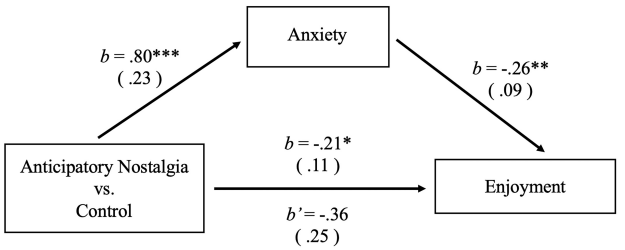

FIGURE 1 | Mediational model tested in study 2. Anxiety partially mediated the effect of anticipatory nostalgia on enjoyment. We found that anticipatory nostalgia enhanced anxiety, which in turn significantly decreased general positive affect (*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$).

STUDY 3

Study 2 showed that anticipatory nostalgia can make people feel anxious, which in turn can lead to less enjoyment of the present moment and less positive emotion. However, the experiences described in studies 1 and 2 were both positive in nature. Whether anticipatory nostalgia plays a different role in negative experiences remains unknown. Existing research suggests that anticipatory nostalgia has a different effect in unfavorable circumstances. If anticipatory nostalgia distances a person from his or her present experiences, participants in an unpleasant situation may feel less anxious and less negative emotion as well as more positive emotion. In study 3, we examined all 4 hypotheses.

Materials and Methods

Participants

We recruited 200 students (78 men and 122 women) from a major public university to participate in the experiment in exchange for a small monetary stipend; they ranged in age from 18 to 39 years (M_{age} = 22.6, SD_{age} = 3.80).

Procedure and Materials

Anticipatory nostalgia and affective valence of the experience were manipulated in a 2 (anticipatory nostalgia or control) × 2 (positive or negative experience) between-subjects design. All participants were asked to imagine they are in Disneyland. Similar to study 1, those in the positive-experience condition were asked to imagine they are having a great time and to visualize in detail what kind of activities they are doing and who they are with. Those in the negative-experience condition were asked to imagine they are having a terrible time in Disneyland. The weather is lousy and the lines are long. They were also asked to imagine in detail what kind of activities they are doing and who they are with. Participants worked at their own pace, with no time constraints.

Participants were then presented with one of the two ads used in study 1 to manipulate their sense of anticipatory nostalgia. They were asked to evaluate the ad for attractiveness and beauty on a 7-point scale (1 = "not at all," 7 = "very much"). Participants next rated their enjoyment and their emotions on the PANAS as in studies 1 and 2, followed by rating their anxiety level according to the four items used in study 2. Finally, participants completed the manipulation-check items for anticipatory and personal nostalgia and reported their gender and age.

Results

Manipulation Checks

Composite ratings of anticipatory nostalgia averaged over the four items ($\alpha = 0.89$) were analyzed in a 2 (anticipatory nostalgia or control) × 2 (positive or negative experience) between-subjects design. A significant main effect of the anticipatory-nostalgia manipulation confirmed that participants in the anticipatory-nostalgia condition felt more anticipatory nostalgia (M = 4.72, SD = 1.53) than did those in the control condition [M = 4.02, SD = 1.62; $F(1,196) = 5.74$, $p = 0.002$, $\eta^2 = 0.049$]. There was a significant main effect of experience valence [$F(1,196) = 16.41$, $p = 0.018$, partial $\eta^2 = 0.028$]. Respondents in the positive experience group ($M_{positiveexperience}$ = 4.64, SD = 1.54) reported more anticipatory nostalgia than those in the negative experience group ($M_{negativeexperience}$ = 4.11, SD = 1.65). However, the interaction effect of the two factors on anticipatory nostalgia was non-significant [$F(1,196) = 0.00$, $p = 0.964$, partial $\eta^2 < 0.001$].

Moreover, as in studies 1 and 2, the anticipatory-nostalgia manipulation did not influence the level of personal nostalgia [$M_{anticipatorynostalgia}$ = 5.15, $SD_{anticipatorynostalgia}$ = 1.38; $M_{control}$ = 5.03, $SD_{control}$ = 1.33; $F(1,196) = 0.44$, $p = 0.510$, $\eta^2 = 0.002$], even though personal and anticipatory nostalgia were positively correlated, $r = 0.24$, $p = 0.001$. Neither the main effect of experience valence [$F(1,196) = 1.84$, $p = 0.177$, $\eta^2 = 0.009$] nor the interaction [$F(1,196) = 0.06$, $p = 0.808$, $\eta^2 < 0.001$] was significant.

Meanwhile, neither the attractiveness of the advertisement, $F(1,196) = 0.20$, $p = 0.652$, $\eta^2 = 0.001$, nor ratings of its beauty, $F(1,196) = 1.85$, $p = 0.175$, $\eta^2 = 0.009$, differed between the anticipatory nostalgia and control group, suggesting that the impact of anticipatory nostalgia on enjoyment and affect was not driven by aesthetic differences between the ads.

Enjoyment

A 2 (anticipatory nostalgia or control) × 2 (positive or negative experience) ANOVA on ratings of enjoyment revealed a significant main effect of experience valence on enjoyment, $F(1,196) = 13.39$, $p < 0.001$, $\eta^2 = 0.06$. Participants in the positive-experience group indicated more enjoyment ($M_{positive}$ = 4.46, $SD_{positive}$ = 1.48) than did those in the negative group ($M_{negative}$ = 3.68, $SD_{negative}$ = 1.58). The main effect of the anticipatory-nostalgia manipulation on enjoyment was not significant, $F(1,196) = 0.06$, $p = 0.815$, $\eta^2 < 0.01$ ($M_{anticipatorynostalgia}$ = 4.10, $SD_{anticipatorynostalgia}$ = 1.51; $M_{control}$ = 4.05, $SD_{control}$ = 1.65).

More interesting, however, was the significant interaction of the two factors, $F(1,196) = 10.94$, $p = 0.001$, $\eta^2 = 0.05$. Confirming our hypothesis, planned comparisons revealed a simple effect of anticipatory nostalgia in the positive- and negative-experience conditions, but in opposite directions. Specifically, in the positive-experience condition, anticipatory nostalgia reduced enjoyment [$M_{anticipatorynostalgia}$ = 4.14,

$SD_{anticipatorynostalgia}$ = 1.48; $M_{control}$ = 4.80, $SD_{control}$ = 1.45; $F(1,196) = 4.68$, $p = 0.032$, $d = 0.44$]; whereas in the negative-experience condition, anticipatory nostalgia increased enjoyment [$M_{anticipatorynostalgia}$ = 4.07, $SD_{anticipatorynostalgia}$ = 1.56; $M_{control}$ = 3.31, $SD_{control}$ = 1.53; $F(1,196)$ = 6.31, $p = 0.013$, $d = 0.49$]. Thus, hypotheses 1.1 and 2.1 were validated again.

Positive and Negative Affect

Using PANAS positive emotion as the dependent variable, a 2 (anticipatory nostalgia group vs. control group) × 2 (positive vs. negative experience) ANOVA indicated that the manipulation of anticipatory nostalgia reduced positive emotion in the positive situation but elevated positive emotion in the negative situation. There was a significant main effect of experience type [$F(1,196) = 16.41$, $p < 0.001$, partial $\eta^2 = 0.08$]. Respondents in the positive experience group ($M_{positiveexperience} = 3.24$, $SD = 0.92$) reported more positive emotions than those in the negative experience group ($M_{negativeexperience} = 2.75$, $SD = 0.84$). The main effect of anticipatory nostalgia on positive emotions was not significant ($M_{anticipatorynostalgia} = 2.98$, $SD = 0.90$; $M_{control} = 3.01$, $SD = 0.93$; $F(1,196) = 0.04$, $p = 0.849$, partial $\eta^2 < 0.01$). A significant interaction effect was expected between nostalgia and experience type [$F(1,196) = 16.01$, $p < 0.001$, partial $\eta 2 = 0.08$]. Further simple effects tests revealed that, for positive experiences, the anticipatory nostalgia manipulation reduced positive emotions [$M_{anticipatorynostalgia} = 2.99$, $SD = 0.99$; $M_{control} = 3.49$, $SD = 0.78$; $F(1,196) = 8.79$, $p = 0.003$, partial $\eta^2 = 0.04$]; however, for negative experiences, anticipatory nostalgia increased positive emotions [$M_{anticipatorynostalgia} = 2.98$, $SD = 0.81$; $M_{control} = 2.52$, $SD = 0.82$; $F(1,196) = 7.26$, $p = 0.008$, partial $\eta^2 = 0.04$].

Similarly, the negative emotion of PANAS was used as the dependent variable to again verify the findings obtained in study 2. The results of the 2 (anticipatory nostalgia group vs. control group) × 2 (positive vs. negative experience) ANOVA indicated that the manipulation of anticipatory nostalgia increased the negative emotion of the subjects in the positive situation, but decreased the negative emotion of the subjects in the negative situation. There was a significant main effect of experience type [$F(1,196) = 32.69$, $p < 0.001$, partial $\eta^2 = 0.14$], and subjects in the positive experience group ($M_{positive} = 1.40$, $SD_{positive} = 0.47$) reported fewer negative emotions than the negative experience group did ($M_{negative} = 1.90$, $SD_{negative} = 0.79$). The main effect of anticipatory nostalgia on negative emotion was not significant [$M_{anticipatorynostalgia} = 1.60$, $SD = 0.61$; $M_{control} = 1.70$, $SD = 0.78$; $F(1,196) = 1.33$, $p = 0.250$, partial $\eta^2 = 0.01$]. In contrast, there was a significant interaction effect between anticipatory nostalgia and experience type [$F(1,196) = 21.16$, $p < 0.001$, partial $\eta^2 = 0.10$]. Further simple effects tests revealed that, for positive experiences, the anticipatory nostalgia manipulation increased negative emotions [$M_{anticipatorynostalgia} = 1.55$, $SD = 0.55$; $M_{control} = 1.25$, $SD = 0.32$; $F(1,196) = 5.94$, $p = 0.016$, partial $\eta^2 = 0.03$]; for negative experiences, the anticipatory nostalgia manipulation reduced negative emotions [$M_{anticipatorynostalgia} = 1.65$, $SD = 0.66$; $M_{control} = 2.16$, $SD = 0.83$; $F(1,196) = 16.54$, $p < 0.001$, partial $\eta^2 = 0.08$].

These results showed the same pattern as those in study 1 and study 2, and were also consistent with the findings on enjoyment.

Anxiety

A 2 (anticipatory nostalgia or control) × 2 (positive or negative experience) ANOVA on anxiety scores yielded non-significant main effects of anticipatory-nostalgia condition [$F_{anticipatorynostalgia}$ (1,196) = 0.26, $p = 0.613$] and experience valence [$F_{valence}$ (1,196) = 0.54, $p = 0.462$]. Importantly, the interaction between anticipatory nostalgia and experience valence was significant, $F(1,196) = 24.70$, $p < 0.001$, $\eta^2 = 0.11$ (**Figure 2**). Here again, anticipatory nostalgia produced directionally different effects for those with positive experiences and those with negative experiences. Specifically, in the positive-experience condition, anticipatory nostalgia increased anxiety [$M_{anticipatorynostalgia} = 4.66$, $SD_{anticipatorynostalgia} = 1.21$; $M_{control} = 3.69$, $SD_{control} = 1.62$; $F(1,196) = 9.96$, $p = 0.002$, partial $\eta^2 = 0.05$], whereas in the negative-experience condition, anticipatory nostalgia reduced anxiety [$M_{anticipatorynostalgia} = 3.74$, $SD_{anticipatorynostalgia} = 1.92$; $M_{control} = 4.92$, $SD_{control} = 1.31$; $F(1,196) = 14.99$, $p < 0.001$, partial $\eta^2 = 0.07$].

Moderated Mediation

To investigate the moderated effect of valence of experience on the mediation effect of anxiety on the influence of anticipatory nostalgia (manipulation condition variable, control = 0, anticipatory nostalgia = 1) on enjoyment, a bootstrapped moderated mediation analysis with 5,000 bootstrapped samples was performed (Model 7, Zhao et al., 2010; Hayes, 2013). We found significant moderated mediation effects of valence of experience (manipulation condition variable, negative = 0, positive = 1) on the mediation effects of anxiety ($b = -0.85$, $SE = 0.21$, 95% CI [−1.33, −0.46]). In the negative-valence experience condition, the indirect path from anticipatory nostalgia to enjoyment was significantly positive ($b = 0.47$, $SE = 0.15$, 95% CI [0.22, 0.81]), whereas in the positive-valence experience condition, the indirect path was significantly negative ($b = -0.38$, $SE = 0.13$, 95% CI [−0.67, −0.15]; **Figure 3**). When anxiety ratings were simultaneously examined as potential mediators for the effect of anticipatory nostalgia on enjoyment, the effect of anticipatory nostalgia was no longer significant ($b = 0.01$, $SE = 0.21$, 95% CI [−0.40, 0.41]). Thus, hypotheses 1.2 and 2.2 were validated again.

Discussion

As in studies 1 and 2, we again found that anticipatory nostalgia reduces enjoyment and general positive affect in the positive-experience condition. However, study 3 revealed that this effect can be reversed when the experience is negative. Follow-up analyses confirmed that this interaction was mediated by anxiety. That is, anticipatory nostalgia increases anxiety in a positive experience, which in turn reduces enjoyment and decreases positive affect. On the other hand, anticipatory nostalgia reduces anxiety in a negative experience, which in turn enhances enjoyment and boosts positive affect.

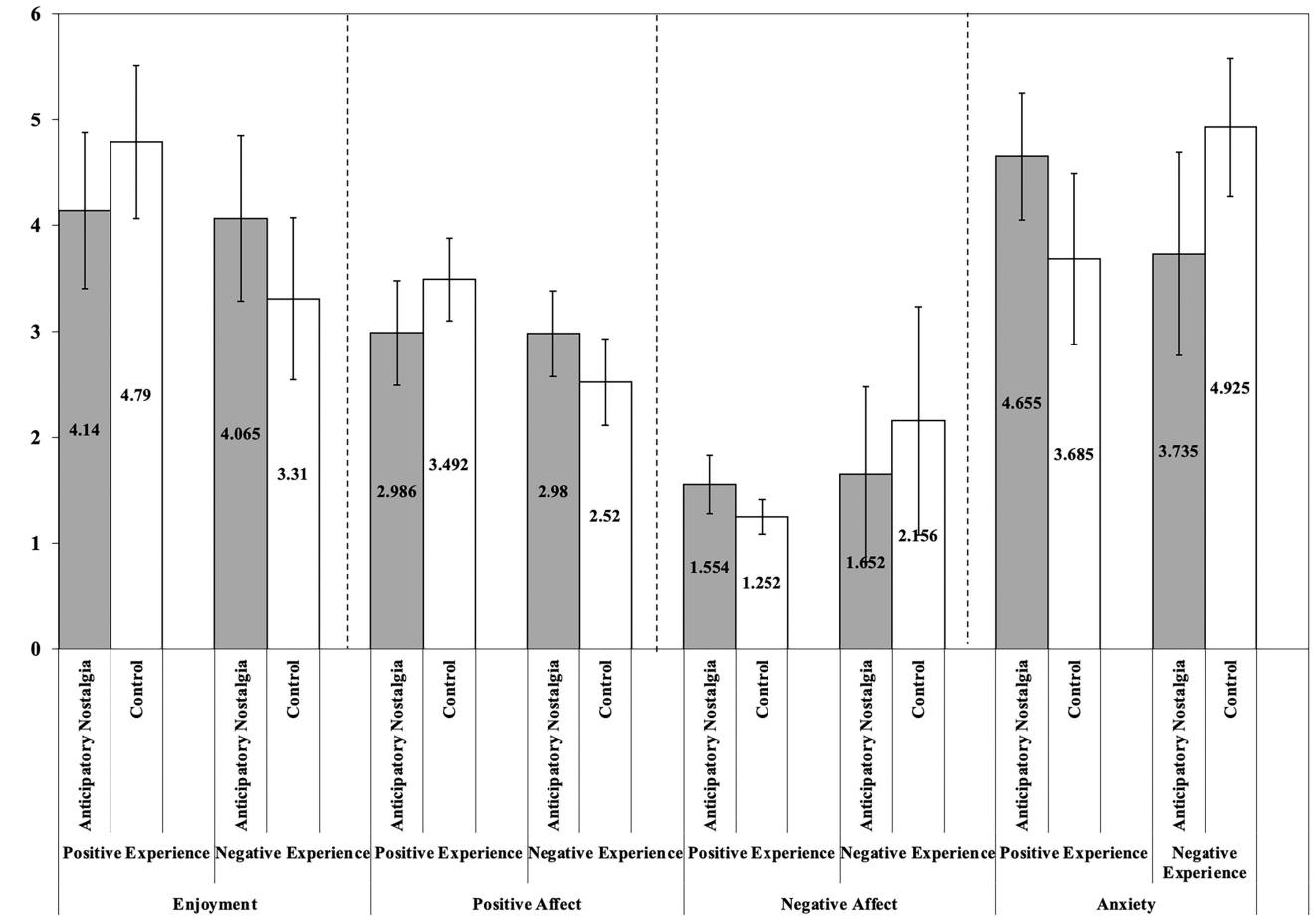

FIGURE 2 | Study 3 enjoyment, positive affect, negative affect and anxiety of participants in 2 (Anticipatory nostalgia vs. Control) × 2 (Positive vs. Negative experience) groups. Anticipatory nostalgia produced directionally different effects for those with positive experiences and those with negative experiences. Specifically, in the positive-experience condition, anticipatory nostalgia increased anxiety, whereas in the negative-experience condition, anticipatory nostalgia reduced anxiety.

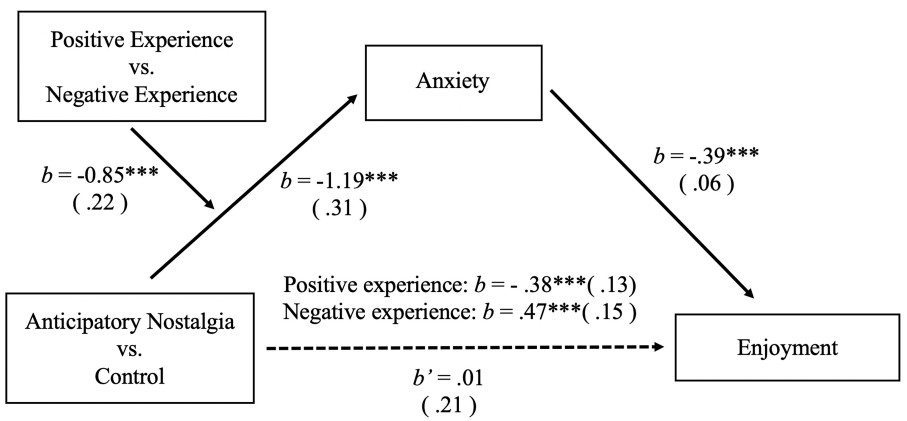

FIGURE 3 | Moderated mediational model tested in study 3. We found significant moderated mediation effects of valence of experience on the mediation effects of anxiety (***$p < 0.001$).

STUDY 4

In the first three studies, we found that anticipatory nostalgia influenced participants' perceived enjoyment in an imagined scenario task. But can anticipatory nostalgia exert an influence in real-life settings? How long does the effect last? To determine if the moderating effect of anticipatory nostalgia would replicate in real life, study 4 examined its influence in a real-life setting. The second objective of study 4 was to examine the duration of the effect in real life. Specifically, we investigated whether the impact of a simple manipulation of anticipatory nostalgia on enjoyment of the day would be evident after 8 h. The third objective of study 4 was to examine the effect of anticipatory nostalgia on life meaningfulness. Research has revealed a relationship between personal nostalgia and meaningfulness (Sedikides et al., 2004; Batcho, 2007). Construal theory suggests that the temporal distancing resulting from anticipatory nostalgia might allow for a higher level of cognitive processing. Viewing the present as past might encourage reflection and reappraisal, leading to greater meaningfulness of the experience at the time.

In study 3, we found that anticipatory nostalgia reduces enjoyment in positive experiences but enhances enjoyment in negative experiences. Study 4 examines whether the impact of anticipatory nostalgia would depend upon level of life satisfaction. In particular, would considering less satisfactory experiences from a future mental vantage point dull the negative aspects and enhance their enjoyment and meaningfulness?

Materials and Methods

Pretest for Material

We pretested two versions of campus postcards in order to ensure the validity of anticipatory-nostalgia manipulation. In study 4. 108 students (ranging in age from 18 to 23) were recruited online (65 women, 43 men; $M_{\text{age}} = 20.25$, $SD_{\text{age}} = 0.86$) and randomly assigned to either the anticipatory-nostalgia condition or control condition.

The two groups were both instructed to go through 6 postcards, read the copy on them, and then choose the one they liked best. Participants in the anticipatory-nostalgia condition saw a set of six campus images with the slogan "Someday, you will miss people and things here." On each, while those in the control condition saw another set of postcards with the same images but a different slogan "On this beautiful campus, you are surrounded by friendly people." All the six postcards were presented to the participants in random order. They were required to click the button under the postcard they liked the best. Only one postcard could be chosen.

After that, participants completed the manipulation-check items for anticipatory ($\alpha = 0.80$) and personal nostalgia ($\alpha = 0.86$), rated their anxiety level ($\alpha = 0.94$) on the same measure used in study 1, 2, and 3, and reported their gender and age.

Results revealed that the anticipatory-nostalgia manipulation did influence the level of anticipatory nostalgia [$M_{\text{anticipatorynostalgia}} = 5.64$, $SD_{\text{anticipatorynostalgia}} = 0.88$; $M_{\text{control}} = 5.23$, $SD_{\text{control}} = 0.91$; $t(106) = 2.39$, $p = 0.019$, $d = 0.46$], and had no effect on personal nostalgia [$M_{\text{anticipatorynostalgia}} = 5.12$, $SD_{\text{anticipatorynostalgia}} = 1.22$; $M_{\text{control}} = 4.92$, $SD_{\text{control}} = 1.11$; $t(106) = 0.95$, $p = 0.344$, $d = 0.18$]. Participants' anxiety did not differ between the two groups [$M_{\text{anticipatorynostalgia}} = 3.93$, $SD_{\text{anticipatorynostalgia}} = 1.40$; $M_{\text{control}} = 3.49$, $SD_{\text{control}} = 1.59$; $t(106) = 1.56$, $p = 0.122$, $d = 0.30$]. The pretest confirmed the sufficient manipulation validity of the campus postcards we would use in study 4.

Participants

Participants were 302 university students invited to give their opinions in an activity sponsored by the alumni association. Eight hours after the session, at about 22:30 p.m., participants were contacted for follow-up. By the end of the day, we failed to get in touch with 37 of them to participate in the second part of the study, leaving a final sample of 265 participants (53.4% female; $M_{\text{age}} = 20$, $SD_{\text{age}} = 1.07$). There were no significant differences in gender, $F(1,300) = 2.31$, $p = 0.271$, or age, $F(1,300) = 1.24$, $p = 0.483$, between the people we failed to contact and those in the final sample.

Procedure

Participants were recruited on campus around noon (11:45 a.m. to 1:20 p.m.) to participate in an activity to help the university select its future official image. As an indicator of how positive or negative they perceive their present to be, participants were first asked to rate their current life satisfaction by responding to the question "Right now, how much are you satisfied with your present life?" on a 7-point scale (1 = "not at all," 7 = "very much"). Next, participants were presented with six different images of the campus and asked to vote for the one they liked best. The students were randomly assigned to either an anticipatory-nostalgia condition or a control condition. We manipulated participants' anticipatory nostalgia with the material pretested. Specifically, for the anticipatory-nostalgia group, the caption read: "Someday, you will miss people and things here." For the control group, the caption read: "On this beautiful campus, you are surrounded by friendly people." Participants were asked to evaluate each of the six images carefully and to vote for the one they liked best. After voting, participants were asked to read the caption and evaluate its fluency ("How fluent do you think this sentence is?" 1 = "not at all," 7 = "very much"). At the end of the first session, participants left their cell phone number in order to be contacted and told which image won the popular vote by the end of the day.

The purpose of the experiment was not to determine the duration of the effect, so we did not schedule multiple surveys after noon. We were more concerned with meeting the requirements of the experiment while not disrupting the normal campus life of the students. We conducted the second round of interviews around 22:30 p.m. for a number of reasons: first, the school's study rooms and library close at 22:00, and most students had already returned to their dormitories at 22:30, so being interviewed did not interfere with their studies; second, this time represented the end of the day, making it convenient for us to ask the subjects to evaluate their feelings about the day. Thirdly, the interviewer had to contact the interviewees one by

one for the 2nd part of survey. It took about an hour to make all the calls, and we wanted to finish the calls before midnight.

Thus, after about 8 h, participants were contacted and asked to indicate the extent to which they enjoyed themselves that day and to what extent they felt they had a meaningful day on a 7-point scale (1 = "not at all," 7 = "very much"). Participants were then informed of the image election results, and those who had selected the most popular image received a small monetary reward. Finally, they reported their gender and age.

Results

Enjoyment

ANOVA analysis indicated a non-significant main effect of anticipatory nostalgia on enjoyment of the day ($M_{control}$ = 4.91, SD = 1.19; $M_{anticipatorynostalgia}$ = 5.01, SD = 1.14; $F(1,263) = 0.48$, $p = 0.49$). Participants' ratings of their life satisfaction before the anticipatory-nostalgia manipulation were tested as a possible moderator variable. We investigated whether the two interacted to influence enjoyment reported at the end of the day. First, regression analysis utilizing manipulation condition variable (control = 0, anticipatory nostalgia = 1), life satisfaction, and their interaction term showed a main effect of nostalgia manipulation [$\beta = 2.28$, $t(263) = 3.73$, $p < 0.001$] on enjoyment of the day, and a main effect of life satisfaction [$\beta = 0.66$, $t(263) = 8.05$, $p < 0.001$]. Further, a significant interaction between anticipatory nostalgia and life satisfaction was identified [$\beta = -0.44$, $t(263) = -3.71$, $p < 0.001$].

Spotlight analyses were utilized to further investigate the moderating effects of life satisfaction (Model 1 in SPSS with 5,000 samples; Hayes, 2013). The model was significant, with a $R^2 = 0.47$, $p < 0.001$. As expected, we found a significant interaction effect between anticipatory-nostalgia manipulation and earlier life satisfaction [$\beta = -0.44$, $t(260) = -3.71$, $p < 0.001$] on enjoyment of the day. For participants with a high life satisfaction (at one standard deviation above the mean: life satisfaction = 6.15), anticipatory nostalgia lowered their enjoyment, $\beta = -0.42$, $t(260) = -2.29$, $p = 0.023$, 95% CI [−0.78, −0.06], whereas the effect was reversed for those with a low life satisfaction (at one standard deviation below the mean: life satisfaction = 3.90), $\beta = 0.54$, $t(260) = 2.95$, $p = 0.004$, 95% CI [0.18, 0.90] (**Figure 4A**). Consistent with the findings from studies 2 and 3, when consumers are satisfied with their lives, anticipatory nostalgia potentially increases anxiety and reduces enjoyment, but when consumers are not satisfied with their lives, anticipatory nostalgia can decrease anxiety and increase enjoyment.

Meaningfulness

ANOVA indicated a main effect of anticipatory nostalgia on perceived meaningfulness. In particular, at the end of the day, participants in the anticipatory-nostalgia group felt that they had a meaningful day to a greater extent (M = 5.18, SD = 1.25) than did those in the control group [M = 4.79, SD = 1.20; $F(1,263) = 6.51$, $p = 0.011$]. Furthermore, consistent with the impact on enjoyment, anticipatory nostalgia did interact with life satisfaction to influence perceived meaningfulness, $\beta = -0.35$, $t(263) = -2.75$, $p = 0.006$. Spotlight analyses were utilized to investigate further the moderating effects of life satisfaction (Model 1 in SPSS with 5,000 samples; Hayes, 2013). The model was significant, with a $R^2 = 0.45$, $p < 0.001$. As expected, we found a significant interaction effect between the anticipatory-nostalgia manipulation and earlier life satisfaction, $\beta = -0.35$, $t(263) = -2.75$, $p = 0.007$, on meaningfulness of the day. For participants with a higher

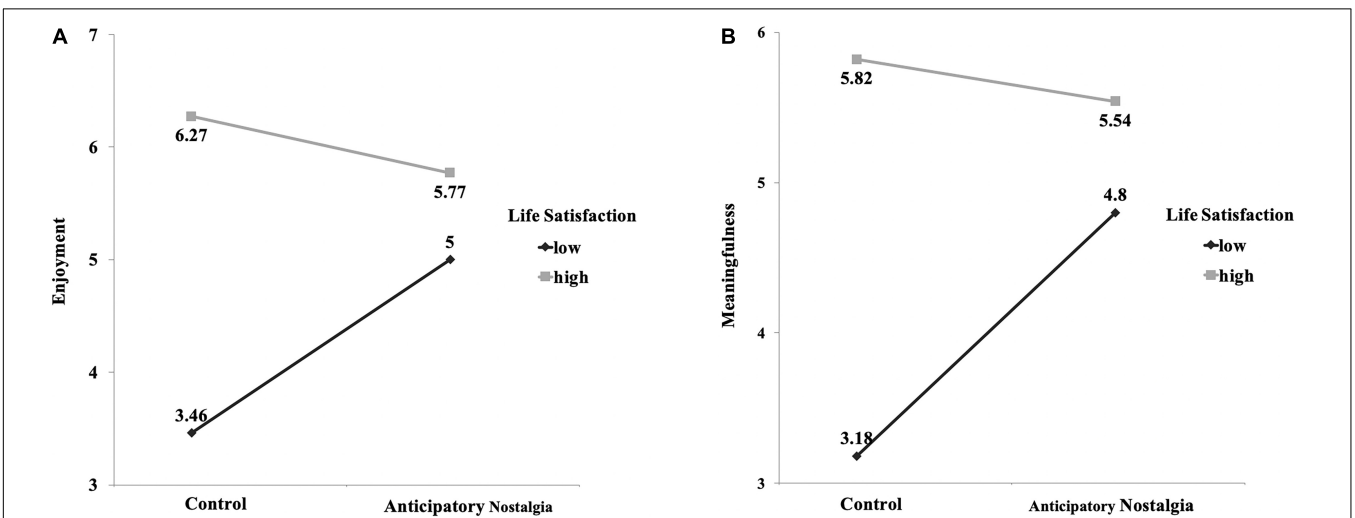

FIGURE 4 | (A) Enjoyment of the day of anticipatory nostalgia group and control group, moderated by life satisfaction at noon. For participants with a high life satisfaction (at one standard deviation above the mean: life satisfaction = 6.15), anticipatory nostalgia lowered their enjoyment, whereas the effect was reversed for those with a low life satisfaction. **(B)** Meaningfulness of anticipatory nostalgia group and control group, moderated by life satisfaction at noon. For participants with a higher life satisfaction (at one standard deviation above the average life satisfaction: life satisfaction = 6.15), anticipatory nostalgia did not significantly influence their perceived meaningfulness of the day, whereas anticipatory nostalgia significantly improved the perceived meaningfulness of the day for those with a lower life satisfaction.

life satisfaction (at one standard deviation above the average life satisfaction: life satisfaction = 6.15), anticipatory nostalgia did not significantly influence their perceived meaningfulness of the day, $\beta = -0.03$, $t(260) = -0.16$, $p = 0.87$, 95% *CI* [−0.41, 0.35], whereas anticipatory nostalgia significantly improved the perceived meaningfulness of the day for those with a lower life satisfaction (life satisfaction = 3.98), $\beta = 0.72$, $t(260) = 3.71$, $p = 0.003$, 95% *CI* [0.34, 1.10] (**Figure 4B**). When consumers are not satisfied with their lives, anticipatory nostalgia can increase the perceived meaning of their current experience.

Discussion

The results of study 4 supported our hypotheses and extended our findings to life beyond the laboratory setting. Anticipatory nostalgia helped individuals who are not fully satisfied with their lives to find greater enjoyment and meaning in their day. However, for those who were already highly satisfied with their lives, anticipatory nostalgia reduced their enjoyment and did not enhance meaningfulness.

GENERAL DISCUSSION

Conclusion

The studies reported here make an important contribution to the recently conceived area of research on the construct of anticipatory nostalgia. Prior studies measured and explored anticipatory nostalgia as a dispositional trait. The present article examined anticipatory nostalgia as a transient state by introducing a state measure, identified a mechanism underlying the impact of anticipatory nostalgia on enjoyment, documented the effects of contextual valence, and investigated its influence on enjoyment and meaningfulness in a real-life context.

Consistent with available research, the present findings support the usefulness of anticipatory nostalgia as a type of nostalgia, distinct from personal nostalgia. As in prior research with dispositional measures, the present research found a moderate correlation of state measures of anticipatory and personal nostalgia. Overall, the present results add to existing evidence for the conclusion that anticipatory nostalgia is related but not identical to personal nostalgia. Prior research revealed that personal nostalgia predicted a tendency toward happiness, whereas dispositional anticipatory nostalgia was associated with a generalized tendency toward sadness. Similarly, study 2 of the present research found that the manipulation of state anticipatory nostalgia decreased enjoyment and positive affect. Echoing this, singer-songwriter Kris Kristofferson sang about the threat of anticipatory nostalgia to a romantic relationship: "This could be our last goodnight together. We may never pass this way again. Just let me enjoy till it's over or forever. Please don't tell me how the story ends" (Kristofferson, 1978).

Importantly, the present research advances the understanding of anticipatory nostalgia by identifying anxiety as one mechanism underlying its impact. Prior research provided evidence that anticipatory nostalgia reflects neither depression nor pessimism but a reluctance to let go of the present. Paradoxically, the desire to hold on to the present might jeopardize full engagement with it. The present studies suggest that anticipating future loss of the present raises anxiety and thereby decreases enjoyment and positive affect. On the other hand, study 3 revealed that when the present is challenging or unpleasant, anticipating change can reduce negative affect by creating temporal distance from the problematic present. Study 4 extended the finding to a real-life application and concluded that anticipatory nostalgia raises anxiety and reduces enjoyment when people are highly satisfied with their lives, but it decreases anxiety and increases enjoyment when people are not fully satisfied with their lives. Construal theory suggests that temporal distance can effect a change in perspective and allow for reappraisal of the present. In a real-life setting, study 4 demonstrated that anticipatory nostalgia enhanced meaningfulness for people who were not fully satisfied with their lives, i.e., it perhaps encouraged a greater appreciation of the moment (for what it is).

The present findings provide insights into how to enhance experiences in a variety of contexts, including marketing, education, and counseling. Marketing strategies that employ methods to trigger anticipatory nostalgia are most effective when they target challenging situations or connect messaging to present annoyance, inconvenience, or difficulty. Marketers can tailor ads, especially on the internet, to address target audiences to arouse anticipatory nostalgia in those who will benefit most from such emotional engagement (caring for an ill relative, coping with the epidemic). Similarly, schools can enhance meaningfulness of their education for students by emphasizing how they'll miss it someday as well as explaining its future usefulness. Counselors can encourage positive reappraisal by engaging clients in an analysis of present adverse circumstances from an imagined future perspective. Future research is needed to determine the circumstances under which anticipatory nostalgia can be constructive, or when it can be applied therapeutically to provide consolation by reminding people that time is fleeting. The finding in study 4 of enhanced meaningfulness for people not fully satisfied with their lives encourages future research into the possible therapeutic application of anticipatory nostalgia. Applied appropriately, perhaps anticipatory nostalgia can promote adaptive coping. The adoption of a future vantage point provides an opportunity for positive reappraisal of present adversity. Less clear is whether or how such mental distancing can enrich appreciation of the positive aspects of the present and increase attentiveness and engagement by reminding people that the opportunity to enjoy the present will not last forever.

Limitation and Future Directions

The present studies represent an important contribution to the advancement of research on anticipatory nostalgia. However, the absence of a manipulation check of the experience valence is a shortcoming in study 3. Although the same practice can be found in the existing literature (Nicolao et al., 2009), we recommend that future research measure affect, both positive and negative, immediately after the experience recall task is completed as

manipulation check (Zhang et al., 2014). Another limitation is the use of only 100 participants in the factor analysis in the pilot test in study 1. In future research, larger sample size should be used to validate the measures.

Some questions of interest not addressed by these studies suggest opportunities for productive future efforts. Are people more likely to experience anticipatory nostalgia in positive or negative circumstances? Could there be any individual differences leading consumers to respond differently to ads and text that invoke anticipatory nostalgia? Are people prone to anticipatory nostalgia more or less likely to experience the anxiety triggered by anticipatory nostalgia arising in the moment than are less prone individuals? Are individuals with a predisposition to anticipatory nostalgia more or less likely to employ it in unpleasant than in pleasant situations? Is the tendency to employ anticipatory nostalgia associated with age, other personality traits, or is it learned?

Are there additional variables that moderate the influence of anticipatory nostalgia? Future research is needed to determine whether construal level plays a role in mediating the impact of anticipatory nostalgia on enjoyment, positive affect, or meaningfulness. By diminishing involvement in the present, perhaps defensive distancing can threaten the quality of social interactions. It remains for future research to explore whether emotional distancing during unpleasant times ameliorates pain at the price of feeling more alone or lonely. Moreover, studies are worth doing to explore whether would there be any differences between the levels of anticipatory nostalgia invoked by appeals of missing the present in near future (e.g., the next year) vs. distant future (e.g., 30 years later).

By definition, anticipatory nostalgia is a form of nostalgia, so the finding of different effects of anticipatory nostalgia in positive and negative situations raises similar questions about personal nostalgia. Can the benefits of nostalgia for the past also depend upon the context and intervening cognitive variables? It also remains for future research to identify distinctions between dispositional and transient state anticipatory nostalgia. Further research is also needed to distinguish anticipatory nostalgia from other loss related concepts, such as bereavement. By definition, anticipatory nostalgia would be expected to occur when change or loss is expected in the future. A person is not as likely to miss something they don't expect to be different or lost someday. That said, not all items on the Survey of Anticipatory Nostalgia (Batcho and Shikh, 2016) are characterized by explicit negative tone. Although items such as "someone you love will leave someday" do sample nostalgia for future loss, other items can be interpreted in different ways. For example, an item such as "you'll move to a new city, home or apartment" can be optimistic and understood as promising better conditions to come (not unlikely for students looking forward to moving on from dormitory living to life after graduation). Similarly, "society will change" can be interpreted positively in terms of scientific and social progress or future resolution of political or other divisions. While some change is accompanied by sadness, much change (especially in contemporary culture focused on scientific and technological progress), represents future improvements. Nostalgia inherently engages positive and negative emotions, which is why questions related to when nostalgia is generally adaptive or maladaptive is of important theoretical and practical interest. Unlike bereavement, anticipatory nostalgia is more likely to involve positive aspects of the future along with the sense of loss. For example, anticipatory nostalgia triggered by the realization that one's child will not always remain young involves the possibility of many wonderful components of the future such as that child 1 day falling in love, getting married, having children of their own. Distinguishing anticipatory nostalgia from anticipatory grief merits further research, given that the grief work perspective has dominated the bereavement literature (Bonanno and Kaltman, 1999). Anticipatory grief is a term that describes a process in which an individual confronted with impending loss initiates the grieving process in anticipation of that event. It is assumed to be a positive adaptive response to expected loss. A recent study has suggested that anticipatory nostalgia may serve as a strategy to cope with loss (Batcho, 2020). Future research conducted from the perspective of coping strategy is likely to be productive.

Together with the present findings, future research can enrich our understanding of the complex emotion of nostalgia and its implications for commercial application, psychological well-being, and quality of life.

DATA AVAILABILITY STATEMENT

The dataset for study 4 is not publicly available because participants were not so instructed.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Shanghai University of Finance and Economics College of Business Research Ethics Committee. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

XZ formulated the research question. XZ, RH, KB, and WY designed the experiments and analyzed the data. XZ, KB, and WY supervised the data collection carried out by research assistants for all the studies conducted in the marketing behavioral lab at the Nanjing University and Shanghai University of Finance and Economics from Autumn 2016 to Summer 2017 and wrote the manuscript together. All authors contributed to the article and approved the submitted version.

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Nostalgia and Heroism: Theoretical Convergence of Memory, Motivation, and Function

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This article seeks to develop theoretical convergences between the science of nostalgia and the science of heroism. We take four approaches in forging a conceptual relationship between these two phenomena. First, we examine the definitions of nostalgia and heroism from scholars, laypeople, and across cultures, noting how the history of defining the two phenomena has shaped current conceptualizations. Second, we demonstrate how nostalgic experiences consist of reminiscences about our own personal heroism and about cultural role models and heroes. A review of heroism research, moreover, shows also that our recall of our heroes and of heroism is tinged with nostalgia. Third, we make linkages between heroism and nostalgia research focusing on functions, inspiration, sociality, and motivation. Nostalgia researchers have illuminated the functions of nostalgia implicating the self, existential concerns, goal pursuit, and sociality. Our review shows that heroism researchers invoke similar categories of hero functionality. Finally, we propose three areas of future research that can profit from the merging of nostalgia and heroism science, involving the mechanisms by which (a) heroism can fuel nostalgia, (b) nostalgia can promote heroic action, and (c) wisdom results from nostalgic reverie.

Keywords: nostalgia, heroism, heroic action, wisdom, motivation, inspiration, prosocial action

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INTRODUCTION

Each year over 100 countries around the world celebrate Mother's Day. Commemorations of the day are replete with social media testimonials featuring people's nostalgic remembrances of their mothers. These memorials underscore the heroic role of mothers in shaping our values, character, and behavior (Allison and Goethals, 2011). On Mother's Day, stories abound of mothers passing on wisdom and fundamental truths about life to their children. Remembrances of mothers also include tales of our mom role-modeling the highest standards of human conduct, including exceptional acts of selflessness and sacrifice. Moreover, mothers are celebrated for motivating and inspiring us all to become our best selves. Mother's Day memories also include accounts of mothers protecting and defending their children from danger. These four types of Mother's Day nostalgic remembrances – wisdom, moral modeling, enhancing, and

protection – correspond to the primary functions of heroism (Kinsella et al., 2015b; Allison, 2019). To our knowledge, there is no scholarship illuminating the relationship between the psychology of nostalgia and that of heroism. The purpose of this article is to propose some important theoretical connections between these two social psychological phenomena.

DEFINITIONAL ISSUES

At first blush, our examples of Mother's Day testimonials point to obvious linkages between nostalgia and heroism. While the two phenomena share common ground, there are several striking differences. For example, nostalgia is defined as an emotion (Sedikides et al., 2015), whereas heroism is defined as a set of behaviors (Allison et al., 2017). Yet while nostalgia is an emotion, it implicates a surprisingly complex array of other psychological processes, including social behavior (Sedikides and Wildschut, 2019). Moreover, while heroism is a set of behaviors, it also encompasses a multitude of emotions and responses (Allison et al., 2019). We begin our analysis by comparing the definitions of nostalgia and heroism from the perspective of dictionaries, laypeople, scientific discovery, and diverse cultures.

Dictionary Definitions

Dictionary definitions of nostalgia describe it as "a bittersweet longing for the past" (American Heritage Dictionary, 2020), a "pleasure and sadness that is caused by remembering something from the past and wishing that you could experience it again" (Merriam-Webster Dictionary, 2020), "a bittersweet yearning for the things of the past" (Wiktionary, 2020), and "a feeling of pleasure and also slight sadness when you think about things that happened in the past" (Cambridge Dictionary, 2020). These definitions emphasize sentimental longing or yearning, bittersweetness, and the positivity resulting from thinking about specific memories from one's past. It is important to note that none of these definitions specify the exact nature of these circumstances. As it will become clear, we argue that much of the content of nostalgic recall centers on heroes and heroism.

Dictionary definitions of nostalgia, focusing on people's recall of "things of the past," may be alluding to ruminations about past positive events that could include heroic actions. Dictionary definitions of heroism, however, contain no allusions at all to nostalgic activity. Dictionaries describe heroism as "impressive and courageous conduct or behavior" (American Heritage Dictionary, 2020), "conduct especially as exhibited in fulfilling a high purpose or attaining a noble end" (Merriam-Webster Dictionary, 2020), "the display of qualities such as courage, bravery, fortitude, unselfishness" (Wiktionary, 2020), or "behavior directed toward achieving something very brave or having achieved something great" (Cambridge Dictionary, 2020). None of these definitions hints at the possible use of heroism as content for nostalgic remembrances, but they do refer to exceptional positive actions that may well be worthy of future nostalgic ruminations.

Layperson Definitions

Hepper et al. (2012) asked participants to generate attributes of nostalgia and used a prototype methodology to identify 18 central features and 17 peripheral features. Central nostalgia features included the descriptors of *fond* and *rose-colored*. They also contained verbs such as *remembering*, *reminiscing*, *thinking*, and *reliving*. Moreover, central features included personally significant memories of childhood and social relationships. Central features also consisted of more positive feelings than negative ones, although they did contain a sense of longing, missing, and wanting to return to the past. Central features included nostalgia triggers such as keepsakes and sensory cues. Peripheral features, on the other hand, entailed such features as warmth, daydreaming, change, calm, regret, prestige, and lethargy. Overall, Hepper et al.'s results indicate that laypersons view nostalgia as a mostly positive, social, and past-oriented emotion. Their research suggests that lay conceptions of nostalgia correspond well with more formal dictionary definitions.

Nostalgic reverie typically has a redemptive component, moving from negative life circumstances to successful ones, and overcoming life circumstances (67 and 76% of the time in two studies; Wildschut et al., 2006). The self almost always plays a central role (87% of the time across two studies; Wildschut et al., 2006). Momentous events (e.g., finishing a marathon and graduating) also are common nostalgic recollections (34% of individuals in one sample; Wildschut et al., 2006). Memories of people are another common topic. Negative events tend to trigger nostalgic remembrances (Wildschut et al., 2006), suggesting that nostalgia can be used as a self-regulatory mechanism (Routledge, 2015).

Allison and Goethals (2011) asked participants to list traits of heroes and subjected these traits to factor and cluster analyses. The resultant categories revealed the "great eight" traits of heroes: *intelligent*, *strong*, *reliable*, *resilient*, *caring*, *charismatic*, *selfless*, and *inspiring*. Using a prototype analytic approach, Kinsella et al. (2015a) identified 13 central characteristics of heroes and 13 peripheral characteristics. Kinsella et al.'s central characteristics are *brave*, *moral integrity*, *conviction*, *courageous*, *self-sacrifice*, *protecting*, *honest*, *selfless*, *determined*, *saves others*, *inspiring*, and *helpful*. The peripheral characteristics of heroes are *proactive*, *humble*, *strong*, *risk-taker*, *fearless*, *caring*, *powerful*, *compassionate*, *leadership skills*, *exceptional*, *intelligent*, *talented*, and *personable*. These lay-definitions of heroism are consistent with those of the dictionaries we consulted. Moreover, although none of these heroic traits offers hints about their nostalgic qualities, the extremely high positive valence of these traits suggests exceptional attributes and actions that are life-changing and highly memorable.

Many of these heroic traits are moral or social traits (e.g., personable, caring, compassionate, and leadership), a pattern that is consistent with the social nature of most nostalgic reflections (Wildschut et al., 2006). Other heroic traits are also associated with momentous personal events that require effort, perseverance, and even bravery (e.g., courageous, powerful, exceptional, talented, and self-sacrifice). By definition, heroic behaviors should leave an indelible mark on the recipients of the behavior who may later be motivated to wax nostalgic about them. As with nostalgia,

negative events tend to set the stage for heroic behavior, with a personal or societal crisis triggering the need for a hero and similar crises being shown to engender nostalgic ruminations (Sedikides and Wildschut, 2020).

Scientific Definitions

Scholars over the years have shown a dramatic shift in their definitions of both nostalgia and heroism. For centuries, nostalgia was viewed as an indication of pathology, beginning with Hofer (1688/1934), who coined the term in his dissertation and conceptualized it as a neurological disease. Throughout most of the twentieth century, nostalgia was still viewed as a psychiatric or psychosomatic disorder (McCann, 1941). Nostalgic people were judged as depressed, showing "a regressive manifestation closely related to the issue of loss, grief, incomplete mourning, and finally, depression" (Castelnuovo-Tedesco, 1980, p. 110). Psychoanalysts concurred on "the importance of the preoedipal mother in the emotional developments of nostalgics" (Kleiner, 1977, p. 17), with nostalgia being regarded as "an acute yearning for a union with the preoedipal mother, a saddening farewell to childhood, a defense against mourning, or a longing for past forever lost" (Kaplan, 1987, p. 466). In short, scholars a century ago believed that nostalgia reflected an overattachment to one's mother, a weakness that condemned the "sufferer" of nostalgia to a weakened, submissive, infantile, stereotypically "feminine" state.

By the turn of the millennium, researchers had parsed the positive side of nostalgia from its negative side (Hepper et al., 2012), paving the way for nostalgia's current conceptualization as a functionally healthy emotion with far more positive effects than negative (Sedikides et al., 2006a,b). Still, we suspect that early conceptualizations of nostalgia as reflecting weakness and "femininity" helped to keep the focus on nostalgia's emotional qualities rather than on its cognitive, motivational, and behavioral elements. Here, we see a significant departure from early scholarly treatments of heroism, which emphasized agency and power. If early conceptions of nostalgia were characterized by scholars as signaling weakness, femininity, and an overattachment to mothers, conceptions of heroism were characterized by the opposite tendency, namely, a bias toward strength and hyper-masculinization.

Heroism also has a storied history and has undergone a significant makeover in the eyes of scholars. Early conceptions of heroes emphasized the qualities of power, apotheosis, and masculinity (Hughes-Hallett, 2004). Heroism in antiquity was reserved exclusively for men who were venerated for their strength, courage, resourcefulness, and ability to slay enemies (Schein, 1984). The human tendency to assign god-like characteristics to heroic leaders can be traced to Beowulf and Achilles, and it later became manifest as the "divine right of kings" during the Middle Ages and Renaissance. This kind of thinking gave rise to the blatantly sexist *great man theory* of heroic leadership (James, 1880). The progenitor of this masculinization of leadership, Carlyle (1841) believed that "worship of a hero is transcendent admiration of a Great Man" (p. 19). From his perspective, all human beings "in some sense or other, worship heroes; that all of us reverence and must ever reverence Great Men" (p. 24). The allure of heroism taps into a deeply rooted archetype of god-like individuals who are "the creators" and "the soul of the whole world's history" (p. 6). Hero worship, from Carlyle's perspective, "is the deepest root of all; the tap-root, from which in a great degree all the rest were nourished and grown…. Worship of a hero is transcendent admiration of a Great Man" (p. 18–19). Carlyle wrote that heroes possess "a sort of savage sincerity -- not cruel, far from that; but wild, wrestling naked with the truth of things" (p. 193). As a result, "the history of the world is but the biography of great men" (p. 12). We make what should be the obvious observation that Carlyle and many other early leadership scholars refer to great "men," never "persons."

Freud (1922) also contributed his views on heroism, again with a strong masculine bias. Freud argued that the prototypical heroic leader of early human groups, "at the very beginning of the history of mankind, was the *Superman* whom Nietzsche only expected from the future…. The leader himself need love no one else, he may be of a masterly nature, absolutely narcissistic, but self-confident and independent" (p. 3). These "primal horde leaders," observed Freud, become deified in death. Because we respond to charismatic leaders with reverence and awe, leaders who invoke religious feelings and ideation are viewed as especially charismatic. Freud believed that human beings gravitate to groups and crave heroic leadership that is powerful, always male, and charismatic. Invoking an evolutionary basis for male heroic leadership, Freud argued "that the primitive form of human society was that of a horde ruled over despotically by a powerful male" (p. 122).

If scholars were guilty of a male bias, it may have stemmed in part from the reality that throughout most of human history, heroism has been an activity reserved for men and denied to most women. Men's advantage in the heroic realm has likely stemmed from their greater physical prowess, highly entrenched patriarchal social forces, and the restrictions that women's reproductive duties often place on their activities (Wood and Eagly, 2002; Becker and Eagly, 2004). Most classical descriptions of heroism have thus emphasized male behavior and masculine attributes and, until recently, most theories of heroism have been gender-biased toward the male perspective. Thus, we argue that conceptually merging the two research areas of nostalgia and heroism may help each one avoid the pitfalls of being either too stereotypically masculine or feminine.

Heroism is defined by most contemporary researchers as extreme prosocial behavior that is performed voluntarily, involves significant risk, requires sacrifice, and is done without anticipation of person gain (Franco et al., 2011; Allison et al., 2017). Not only is heroic action inclusive with regard to gender but also expanded definitions of heroism that include more stereotypically feminine and communal traits suggest that women can be more heroic than men (Hoyt et al., 2020). While most heroism scholars favor efforts to develop an objective definition of heroism, other scientists have pushed back against extreme objectivity, arguing that heroism is ultimately a mental and social construction and therefore in the eye of the beholder (Allison and Goethals, 2011). What's important is the label that people assign to the hero – their perception of heroism – more than a strict cataloguing of that person's actions as heroic.

The subjectivity of heroism is an important issue in considering whether people nostalgize about heroes. Older Americans, for examples, can share a longing for the wisdom of Martin Luther King, Jr., but on Mother's Day one person's mother differs from that of another person. Thus, we are more likely to agree about the identity of specific cultural heroes than about our personal heroes. For this reason, the distinction between culturally shared nostalgia and personal nostalgia is an important one, especially when considering the heroic content of nostalgia.

Cross-Cultural Definitions

Hepper et al. (2014) measures conceptions of nostalgia in a range of cultures spanning 18 countries (e.g., Australia, Chile, China, Ethiopia, Germany, India, Japan, Uganda, Romania, and United States) across five continents. Nostalgia is universally regarded as an emotion, especially one of longing. It entails remembering or reminiscing about fond memories from the past. These memories have personal relevance or involve relationships with others. There was also considerable cross-cultural agreement regarding the interrelations among the 35 features. A factor analysis of the pooled correlation matrix revealed three factors. The primary factor, longing for the past, comprises cognitive, motivational, and contextual features of nostalgia along with longing and loss. The second factor, negative affect, consists of peripheral negative affective features. The third factor, positive affect, contains central and peripheral affective features – both general (e.g., emotion and relationships) and positive (e.g., warmth and happiness) ones.

Whereas nostalgia is considered as a universally shared emotional experience, heroism appears to be more culturally specific. Cross-cultural studies of heroism are rare. One study, conducted by Spyrou and Allison (2019), compared American, Greek, and Indian participants' conceptions of heroes and hero attributes. The results showed some overlap in hero categories (e.g., social activists), but Indians tended to list celebrities and actors as heroes to a far greater degree than did Greeks and Americans. Greeks, moreover, were more likely to list war heroes and heroes from antiquity than the other two nations. Americans were more likely to list athletes, superheroes, and scientists. Differences in heroic attributes showed that Indians valued agency, piety, and charisma, whereas Greeks and Americans tended to value the heroic traits of altruism and integrity along with agency. The greater subjectivity and cultural varieties of heroism compared to nostalgia may explain why there are so few cross-cultural studies of heroism. Nostalgia may implicate universal psychological processes involving emotional expression, whereas the content of heroism may be more person-specific and culture-specific.

HEROISM IN NOSTALGIC CONTENT

In their seminal article that opened the floodgates for nostalgia research, Wildschut et al. (2006) found that "the two most common objects of nostalgia were persons and momentous events" (p. 980). This finding suggests that nostalgic remembrances have heroic content. It seems reasonable that many of the "persons" about whom we nostaligize are people we most admire and place on a heroic pedestal. Wildschut et al. found that the two most prevalent content items across two studies were close others (friends, family, and romantic partners) and momentous events. These investigators did not specify the exact nature of those close others, unfortunately. But they did discover higher nostalgia ratings for family among participants with negative affect and loneliness. In short, negative emotions tend to trigger nostalgia and, in particular, people become more nostalgic for close family members during difficult emotional times. Additional research by Routledge (2015) has shown that a large proportion of nostalgic content includes memories of activities involving close nuclear family members. This finding, coupled with the discovery of Allison and Goethals (2011) that over 40% of their survey respondents listed either their mothers or fathers as their heroes, suggests that our heroes tend to occupy a significant portion of nostalgic content.

Wildschut et al. (2006) also discovered that "descriptions of nostalgic experiences typically featured the self as a protagonist in interactions with close others (e.g., friends) or in momentous events" (p. 975). The perception of the self as a hero has not been studied by heroism scientists, possibly because strong social norms exist that discourages pronouncements of one's own heroism (Worthington and Allison, 2018). Still, private ruminations and daydreams of one's own past heroic accomplishments, even embellished ones, are likely to be common (Greenwald, 1980). Wildschut et al. found that most nostalgic content about the self was redemptive in nature, with redemption defined as occurring when "the narrative progresses from a negative life scene to a positive or triumphant one" (p. 976). Heroism scientists have found that redemption is one of the central characteristics of a heroic life (Allison and Goethals, 2011). It therefore seems reasonable that much of nostalgia features one's past self-occupying the role of a hero. McAdams (2014) has reviewed many studies highlighting the powerful role of self-redemption in the crafting of one's personal identity. McAdams finds that people are strongly motivated to transform their suffering into a positive emotional state, moving from pain to redemption. Self-redemption is also the centerpiece of the classic hero's journey in storytelling (Allison et al., 2019).

We believe that a promising area for future research resides in exploring whether people nostalgize about heroes. This research should tap directly into nostalgic memories and should ask people to rate the degree to which a person or persons in their memories are heroic. If nostalgic remembrances an infused with heroic elements, then this research should show that the people about whom we are nostalgic tend be viewed as heroic. Moreover, we envision future researchers conducting an experiment that directly manipulates the target of a nostalgic remembrance, with some participants recalling people who have been important to them ("others" as heroes condition) and other participants recalling "a past event when you accomplished something you are proud of" ("self" as hero condition). We would expect people to rate the persons in their nostalgic memories as heroic. In addition, we might

predict that nostalgizing about others as heroes would produce different psychological consequences compared to nostalgizing about the self as a hero. Because past investigations of nostalgia (e.g., Wildschut et al., 2006; Sedikides et al., 2015) have shown that nostalgia reduces loneliness, we would expect that this loneliness effect might only apply to nostalgia about others as heroes compared to nostalgia about the self as a hero. Moreover, because past nostalgia research has also shown that nostalgia can make people more goal-oriented (Sedikides et al., 2018; Sedikides and Wildschut, 2020), we would expect that this goal-orientation effect would be stronger when people nostalgize about the self as a hero than when nostalgizing about others as heroes. Future studies such as these would suggest that nostalgia about others as heroes procures different psychological benefits than nostalgia about the self as a hero. Establishing an empirical link between nostalgia and heroism may offer exciting scientific extensions of both scholarly areas.

NOSTALGIA AND HEROISM: MOTIVATION, INSPIRATION, AND PROSOCIALITY

Since seminal article of Wildschut et al. (2006), nostalgia has been shown to fulfill several significant psychological functions. Sedikides and Wildschut (2019), for example, have demonstrated that nostalgic experience tends to trigger both inspiration and motivation in ways that appear to parallel the manner in which heroism inspires and motivates (Allison and Goethals, 2016). Nostalgia may therefore play a role in energizing and directing heroic feelings and intentions, thereby increasing the likelihood of risky and unusual actions associated with heroism. We illuminate the connection between these benefits of nostalgia and heroism below.

Motivation

In their review of the motivational benefits of nostalgia, Sedikides and Wildschut (2020) distinguish among three kinds of motivational benefits: *generalized*, *localized*, and *action-oriented* motivation-based benefits. Generalized motivational benefits include the finding that nostalgia increases one's sense of youthfulness, with people experiencing lower subjective age, more alertness, and increased energy. Allison and Goethals (2014) proposed an "energizing" function of heroism, and there are self-report data supporting this assertion (Allison and Goethals, 2011; Kinsella et al., 2015b). Sedikides and Wildschut found that nostalgia also promotes inspiration, engendering a sense of new possibilities, and it encourages financial risk-taking. In heroism science, Kohen et al. (2017) review several case studies of heroic risk-taking, concluding that heroes are role-models for prosocial risk-taking behavior. Franco et al. (2011) noted that the risk-taking aspect of heroism is what makes heroism especially desirable and emotionally moving. Allison and Goethals (2016), moreover, have argued that heroes who help in emergency situations provide people with mental scripts for performing similar heroic acts in their own lives.

The second type of motivational benefit of nostalgia identified by Sedikides and Wildschut (2020), localized motivation, includes a boost in people's growth orientation, including an increase in growth-oriented self-perceptions and behavioral intentions. Nostalgia enhances intrinsic motivation, and strengthens one's desire to pursue important goals. A number of heroism scholars have uncovered the similar tendency of heroism to invoke idealized versions of the self, to recover from past personal wounds, and to develop and pursue meaningful personal goals (e.g., Efthimiou et al., 2018; Williams, 2018; Bray and James, 2019; Ross, 2019). One could argue that exposure to heroism provides inspiration for growth, and that nostalgic ruminations about such heroism offers reminders about our growth-oriented goals and opportunities.

The third category of motivational benefit of nostalgia identified by Sedikides and Wildschut (2020), action-oriented motivation, stems from the finding that nostalgia galvanizes people's desire to retain their memberships in organizations, increases people's willingness to help others, and reduces people's willingness to engage in self-destructive behaviors such as gambling and smoking. In the science of altruism and heroism, a number of investigators have found that the act of witnessing someone helping another person increases people's willingness to help others (Latane and Darley, 1968; Fischer et al., 2011). In addition, Keck et al. (2018) have shown how exposure to heroic actions promotes post-traumatic growth, such that individuals inspired by heroes tend to adopt healthy new beliefs and values, view themselves and the world in a more positive manner, acquire wisdom, and experience a greater appreciation for life. In effect, witnessing acts of heroism helps to transform survivors of trauma into the heroes of their own life journeys.

We argue that nostalgia can play a key role in promoting action-oriented motivations aimed at heroic self-recovery and growth. Nostalgia instigates approach-motivation, "mixing memory and desire," in the words of Eliot (1888). Specifically, nostalgic memories of one's best self tend to motivate people to pursue a more idealized self in the future. Sedikides and Wildschut (2020) also found that nostalgia also boosted self-esteem. Such an augmentation of the self could reasonably contribute to people acting in heroic ways in the future. Nostalgia promotes a growth orientation (e.g., state authenticity or intrinsic self-expression, growth-oriented self-perceptions, and behavioral intentions), galvanizes intrinsic motivation, and strengthens the pursuit of one's important goals. This action-oriented motivation cements an employee's resolve to stay with the organization (i.e., weakens turnover intentions), increases the propensity to help and actual helping, and contributes to behavior change. In short, nostalgia and heroism may work in tandem to promote a better self and a better society.

The nostalgia-heroism link is nicely illustrated in a study conducted by Abeyta et al. (2014), who gave American undergraduates either a nostalgic-event or an ordinary-event writing prompt. Three coders rated the ensuing narratives on three categories. The first category included social content (i.e., social interactions and relationships), the second included more specific attachment-related content (i.e., feeling loved, protected,

and trusted by others), and the third included agency (i.e., personal competence, success, and power). The coders also rated the presence of positive and negative feelings. Abeyta et al. found that nostalgic (compared to ordinary) narratives contained more references to all three categories, attesting to the relevance of sociality and identity for the nostalgic experience. The nostalgic (compared to ordinary) narratives were characterized by more positive than negative feelings, and more feelings in general. These findings are consistent with hero research showing that heroism implicates these same prosocial categories. A heroic act is a social activity promoting the galvanization of relationships (Allison, 2019), an attachment-oriented activity involving the protection of loved ones (Kinsella et al., 2015b), an activity of potency and agency (Hoyt et al., 2020), and an activity implicating feelings of warmth, nurturance, and care (Kinsella et al., 2017).

Inspiration and Prosociality

Nostalgia may be one source of inspiration on the journey to heroic behavior. Stephan et al. (2015) found that individuals who experience nostalgia more often (i.e., nostalgia proneness) report feeling inspired more frequently and more intensely. Moreover, this association is causal: induced nostalgia – recalling a nostalgia memory relative to an ordinary (control) memory – heightens both general and specific inspiration for exploratory endeavors. Several additional studies that investigated the mechanism underlying this connection found a serial mediation effect, in which nostalgia increases feelings of social connectedness, which raise self-esteem, which increase inspiration. Does nostalgia-induced inspiration lead to any tangible motivation to pursue action? In one experiment by Stephan et al., individuals who engaged in nostalgic (vs. ordinary) reverie and wrote down their most important goal and their motivation to pursue that goal, nostalgia increased inspiration, which in turn increased intentions to pursue that most important goal. Currently, there is no heroism science research that points to the causal sequence of heroism engendering social connection, self-esteem, and inspiration. Given all the linkages between nostalgia and heroism that we have reviewed, it seems likely that our ideations about heroes play an important role in this psychological process.

In heroism science, there is research showing that heroic underdogs engender inspiration. When we encounter underdogs who enjoy unexpected success, we tend to identify with them, root for them, and judge them to be highly inspiring when they triumph (Kim et al., 2008; Allison and Burnette, 2009; Davis et al., 2011). Kinsella et al. (2015b) report data suggesting that the inspiring quality of heroes is what sets heroes apart from altruists, helpers, and leaders. When asked which one trait of heroes is the most important, people report that the trait of *inspiring* is the most telling attribute of a hero (Allison and Goethals, 2011). The finding that charisma is a central trait of heroes underscores the idea that heroes move us and inspire us (Kinsella et al., 2015a).

Reading or listening to tales of heroism has been shown to produce important psychological benefits (Allison et al., 2019). In classic hero mythology, the hero is separated from their safe, familiar world and thrown into dangerous, unfamiliar circumstances (Campbell, 1949). The hero is ill-equipped for the journey and is humbled to discover that they are missing important inner qualities such as self-confidence, courage, resilience, compassion, or wisdom. Encountering villains and setbacks, the hero receives help from allies and mentors who guide the hero toward personal transformation. Allison et al. (2019) describe six types of personal transformations that heroes undergo: mental, moral, emotional, spiritual, physical, and motivational. The metamorphoses of the hero foster developmental growth, promote healing, cultivate social unity, and advance society (Allison and Goethals, 2016). The popularity of novels, plays, and movies in which these heroic transformations occur can be traced to the inspirational benefits of the heroic growth that we witness in these stories (DuBois, 2019).

The final stage of the classic hero's journey, involving the hero giving back what they have learned to society, underscores the idea that heroism is fundamentally prosocial rather than selfish. Several converging lines of research have demonstrated that nostalgia, at both the trait and state level, are associated with prosocial motivations and behaviors (Sedikides et al., 2015). For example, nostalgic individuals picked up more "accidentally" dropped pencils than individuals in a control state (Stephan et al., 2014). Nostalgic individuals gave more to charity than individuals in a control condition (Zhou et al., 2012) and individuals nostalgic for their university alma mater donated more frequently and in higher amounts (Green et al., 2020, under review) than those lower in university nostalgia. Nostalgia is associated with empathy (particularly affective, relative to cognitive, and empathy), which appears to mediate this link (Juhl et al., 2020), and attachment security mediates the link between trait nostalgia and increased empathy.

Nostalgia appears to inhibit some types of antisocial behaviors as well as activate prosocial behaviors. Nostalgic reminiscences are fundamentally social, warm, and close. As such, they may blur some boundaries between social groups, particularly when a reminiscence is shared with a wider, superordinate social group, which may help the nostalgizer assimilate elements of an outgroup. Two experiments (Turner et al., 2018) found that young people experiencing nostalgia were more likely than those in a control group to indicate a greater sense of overlap with older adults and greater social connectedness, which in turn fostered more positive attitudes (less prejudice) toward older adults. This reduction in prejudice elicited by nostalgia appears to be robust, having been extended to more positive views of immigrants (Gravani et al., 2018), and the mentally ill (Turner et al., 2018), among other groups. Thus, as heroic behavior may require both the inhibition of selfish and parochial attitudes and actions as well as the motivation and activation toward extraordinarily selfless behaviors, nostalgia may lubricate both aspects.

Collective Nostalgia

Nostalgia exists at the collective level (Wildschut et al., 2014), conforming to the requirements of a collective or intergroup emotion, as articulated by intergroup emotions theory (Mackie et al., 2000). That is, collective nostalgia directs

behavior toward the group, can be distinguished from personal nostalgia, and is correlated with the degree of identification with the group (Wildschut et al., 2014). Some heroic behavior may be activated by the *personal self* (i.e., unique motives and traits), but other *heroic behavior* may be activated by the collective self (i.e., identification of the self as part of a collective with shared traits, goals, and history). For example, Rosa Parks' decision to refuse to comply with a request to change seat may have been influenced by her identification as an African American. To the extent that the collective self-motivates heroism, the analogous collective emotions, particularly collective nostalgia (e.g., reflecting on the unique cultural history of one's group) may be critical determinants of this type of heroism.

National nostalgia comprises the vast majority of collective nostalgia research (Smeekes, 2015). While national nostalgia can elicit more positive feelings toward ingroups, it can also lead to negative attitudes about outgroups (e.g., anti-immigrant feelings; Smeekes et al., 2014), more parochial buying habits, etc. These links are not found for personal nostalgia, which typically correlates only modestly with national nostalgia. Smeekes (2015) has reviewed a considerable body of research pointing toward the potential destructive effects of national nostalgia, such as negative prejudicial attitudes behaviors directed toward citizens residing outside of one's own national identity. History has taught us that while Adolf Hitler was a hero to the German people for boosting their national pride, his nostalgia for German greatness went to such an extreme that it led to genocidal attacks on outgroup members. Sedikides et al. (2008) induced collective nostalgia in Greek participants by having them write or read about Greek music and cultural traditions. Afterward, the participants indicated a preference for their Greek heritage, television shows, and consumer products. But this pro-Greek benefit of nostalgia had a negative consequence, as participants disparaged foods and products that were *not* Greek. The point we wish to make here is that while nostalgia and heroism can inspire people to become their best selves, it can also inspire people to become their darkest and worst selves.

HEROISM AS PROPULSION FOR NOSTALGIC WISDOM

Our review of the literature in the nostalgia and heroism fields shows that wisdom has received scant attention from nostalgia scholars, whereas the wisdom benefits of heroism has been the subject of considerable analysis. Consensus regarding the construct of wisdom is hard to come by, though most scholars agree that it involves harnessing and applying knowledge to effectively address real-world issues (Sternberg, 1998; Grossmann et al., 2010), typically for the common good (Webster, 2003; Sternberg, 2004), requiring perspective-taking and ego-decentering (Ardelt, 2003; Grossmann, 2017). Proposed facets of wisdom include emotion regulation and openness (Webster, 2003), reflectiveness (Ardelt, 2003), ego decentering (Grossmann, 2017), and many more. These scholarly approaches to wisdom coincide with dictionary definitions of wisdom as "the ability to judge what is true, right, and lasting" (American Heritage Dictionary, 2020) and "the ability to use knowledge and experience to make good judgments and decisions" (Cambridge Dictionary, 2020).

Heroism researchers have examined the ways in which heroes and hero narratives fulfill a number of important psychological and life-enhancing functions that relate to wisdom. In their analysis of the impact of hero stories and narratives throughout history, Allison and Goethals (2014) demonstrate how heroism offers wisdom to persons and groups (Cajete et al., 2010; Sternberg, 2011; McAdams, 2014). Stories crystalize abstract concepts and endow them with contextual meaning (Boje, 1995). Gardner (1995) and Sternberg (2011) point to numerous examples of heroic leaders using the persuasive impact of storytelling to win the minds and hearts of followers. Stories are not just tools of social influence directed toward others; they also can precipitate self-change. As mentioned earlier, McAdams (2014) has shown how personal self-narratives play a pivotal role in shaping our life trajectories and maintaining our subjective well-being. Stories offer vivid, emotionally laden capsule summaries of wisdom for which the human mind was designed (Wyer, 1995). Price (1978) has even asserted that "a need to tell and hear stories is essential to the species *Homo sapiens* – second in necessity apparently after nourishment and before love and shelter" (p. 3).

Allison and Goethals (2014) argued that hero narratives fulfill two principal psychological functions: an *epistemic* function and an *energizing* function. The epistemic function refers to the knowledge and wisdom that hero stories impart, whereas the energizing function refers to the ways that hero stories offer inspiration and promote personal growth. The epistemic benefits of heroism reside in heroic actions providing scripts for prosocial action, revealing fundamental truths about human existence, unpacking life paradoxes, and cultivating emotional intelligence. Stories of heroic action impart wisdom by supplying mental models, or scripts, for how one could, or should, lead one's life. It seems reasonable that these heroic role models who supply such wisdom would be useful subjects of nostalgic reminiscences.

Hero stories reveal truths and life patterns that our limited minds have trouble understanding using our best logic or rational thought. Allison and Goethals (2014) have used the term *transrational* to describe these phenomena, in that these challenging truths tend to defy comprehension using conventional, logical methods. Transrational phenomena that commonly appear in hero stories include *suffering*, *love*, *paradox*, *mystery*, *God*, and *eternity*. These phenomena beg to be understood but tend to resist a full understanding using logic or reason. Hero storytelling has the ability to reveal the secrets of the transrational. These heroic tales help us to think transrationally in at least three ways: hero stories reveal deep truths, illuminate paradox, and develop emotional intelligence.

First, with regard to deep truths, we should note that the great mythologist Campbell (1949) devoted his entire career to championing the idea that hero myths reveal life's deepest psychological truths. Truths are considered deep when their

insights about human nature and motivation are not only profound and fundamental but also hidden and nonobvious. Campbell (1949) believed that most readers of mythic hero stories remain oblivious to their deep truths, their meaning, and their wisdom. Deep truths contained in hero myths are difficult to discern and appreciate because they are disguised within symbols and metaphors. As a result, readers of mythology underestimate the psychological value of the narratives, prompting Campbell to proclaim that "mythology is psychology misread as biography, history, and cosmology" (p. 256).

Hero stories convey deep truths by sending us into *deep time*, meaning that the stories have a timeless quality that connects us with the past, the present, and the future. Phrases such as, "Once upon a time," "A long time ago in a galaxy far, far away," and "they lived happily ever after," are examples of storytelling devices that signal the presence of deep truths embedded in deep time. By grounding people in deep time, hero stories reinforce ageless truths about human existence. Classic hero stories and fairy tales tend to emphasize bygone times, saturating these narratives with nostalgic qualities. We suspect that these hero stories are designed to evoke nostalgia in order to underscore the wisdom contained in them.

It is easy to see how personal nostalgic reverie is connected to deep time. When we nostalgize, we are hurled back to a time when our deepest needs were most meaningfully satisfied, including, we would argue, the need to meet the challenges of a present situation by absorbing wisdom from past heroic role models. Past nostalgized heroes supplying us with wisdom need not be real people; they may be heroes from fictional stories about which we have fond memories. For example, the first author of this article recalls many times in his life when he has drawn wisdom and inspiration from the character of Huckleberry Finn, who demonstrated a courageous, adventurous spirit and an endearing innocence in his worldview. During those few times in his life when the author was able to experience a fleeting facsimile of Huckleberry Finn's heroic life, this experience itself became the subject of the author's future nostalgic reverie. We suggest that memories of our past self – our prideful accomplishments or hard-wrought redemptions – could be considered a source of heroic wisdom that we need to alleviate dark moods or to spur us into positive action.

In addition to deep truths and deep time, wisdom from hero stories also derives from *deep roles* in our human social fabric. Moxnes (2013) identified the deepest social roles in hero tales as archetypal family roles that include mother, father, child, maiden, and wise old man. Family role archetypes occupy pervasive character roles in classic hero mythology, where kings and queens, parents, stepparents, princesses, children, and stepchildren abound. Moxnes' research shows that even if these deep role characters are not explicit in hero stories, human beings will project these roles onto the story characters. His conclusion is that the family unit is an ancient device for understanding our social world. From these considerations, we can understand how and why nostalgia content has been found to include many close family members (Wildschut et al., 2006; Routledge, 2015). We derive wisdom from family members occupying these deep social roles, and nostalgic remembrances offer us reminders of this wisdom. Batcho (2018) uncovered evidence for the transmission of this type of wisdom from close family members, analyzing the memoirs of Ukrainians who took part in resistance movements during the Second World War. She found that when her participants waxed nostalgic about their childhood values handed down to them from their parents, such nostalgia led many to risk their lives to engage in a dangerous freedom struggle.

Another form of heroism-based wisdom lies in the epistemic value of paradoxical truth. As author G. K. Chesterton once observed, *paradox is truth standing on its head to attract our attention*. Hero stories shed light on meaningful life paradoxes (Franco et al., 2011; Allison and Goethals, 2014). Throughout human history, the process of unpacking the value of paradoxical truths has been most effectively revealed through heroic storytelling (Rohr, 2011). Campbell (1949) argued that hero stories are saturated with paradoxical truths, including the idea that suffering can lead to enlightenment and that leaving home allows the hero to discover home. The first author of this article often nostalgizes about his grandmother, who passed down the paradoxical truth that one must give love away in order to receive it. The counterintuitive nature of paradoxical truths makes heroic storytelling, and our nostalgic remembrances of the heroic storyteller, a powerful source of wisdom.

The final type of wisdom that nostalgia may provide is the wisdom of emotional intelligence, defined as the ability to identify, understand, use, and manage emotions (Caruso et al., 2014). Bettelheim (1976) argued that children's fairy tales are useful in helping people, especially children, understand emotional experience. With their many dark, foreboding symbols and themes, such as witches, abandonment, neglect, abuse, and death, these heroic fairy tales allow people to experience and resolve their fears. Bettelheim believed that even the darkest of fairy tales, such as those by the *Brothers Grimm*, help people to achieve clarity about confusing emotions. The hero of the story emerges as a role model by demonstrating how one's fears can be overcome. A striking example can be found in the *Harry Potter* novels, which have been shown to help both children and adults face their anxieties, increase their empathy, and grow emotionally (Gibson, 2011; Stetka, 2014). In his classic book, *The Denial of Death*, which spurred considerable work on terror management theory, Becker (1973) argued that merely witnessing a heroic act, either in person or in literature, helps buffer anxiety and existential terror. In short, we may learn about the wise use of one's emotions through heroic storytelling and through nostalgizing about those stories and the heroes in them.

CONCLUSION: THREE FUTURE RESEARCH DIRECTIONS

We began this article by noting the significance of Mother's Day as an example of a cultural event honoring a hero who is also a likely target of frequent nostalgic reminiscences.

If our mothers and other close family members can be a source of both heroism and nostalgia, then it would seem to be a fruitful exercise to identify and develop connections between these two psychological and behavioral phenomena. We noted that the definitions of the two phenomena suggest convergences focusing on the attributes of motivation, inspiration, and prosociality. The history of nostalgia and heroism, moreover, suggests a fascinating bias that may have kept the two research literatures apart for many decades. Nostalgia's historical emphasis on over-emotionality, over-attachment, and weakness endowed it with a stereotypically feminine reputation, whereas heroism's historical emphasis on agency, apotheosis, and leadership endowed it with a stereotypically masculine standing. Recent research on nostalgia that has discovered its potency (Sedikides and Wildschut, 2020), and heroism research that has unveiled the caring and nurturant side of heroic acts (Hoyt et al., 2020), have appropriately androgenized the two phenomena, thus smoothing the way for their theoretical integration.

We propose three areas of future research that may profit from the merging of nostalgia and heroism science. The first area ripe for further study focuses on identifying the mechanisms by which heroism can fuel nostalgia. The second promising area centers on the reverse causal direction, namely, the processes by which nostalgia might promote heroic action. Finally, we believe that future investigators may wish to explore the mechanisms underlying the acquisition and reinforcement of wisdom as yet another positive consequence of nostalgic experience.

Heroism as Fuel for Nostalgia, Its Benefits, and Its Drawbacks

In the United States, the very existence of holidays throughout the year, such as Mother's Day, Father's Day, Veteran's Day, and President's Day, underscores the degree to which human societies create culturally rich infrastructures that engender nostalgia about our heroes. The longing for our past heroes is illustrated through heroic representations on our statues, our monetary currency, and named buildings, roads, schools, and cities. People need heroes and have a romantic longing for them (Goethals and Allison, 2019). The downside of this romanticization of heroes is that it leads to distorted thinking about the past, with selective attention given to desired aspects of past living over the drawbacks. Allison and Goethals (2020) have argued that Donald Trump's "Make America Great Again" (MAGA) movement is an example of an immature narrative that uses heroism to divide people rather than unite them. Although the narrative is simplistic, it still paints a much-needed big cosmological picture for people, inside of which they can feel safe and secure. Trump has embraced the role of the heroic Messiah delivering the nostalgic message of reclaiming former greatness, calling himself "the chosen one." That a significant portion of Trump's supporters literally believe he was an answer to their prayers, and that he was divinely chosen to protect a Christian nation, speaks to the power of heroism-guided nostalgia (Whitehead et al., 2018). It also speaks to the unfortunate truth that there may be as many downsides to heroic nostalgia as there are benefits.

When we closely examine the MAGA movement, we can see how all four words of this slogan invoke a powerful cosmology, tinged with nostalgia, designed to move and to mobilize people. First, the word "Make" taps into the need for agency, the need to fashion something, to take control, to assume power, and to take action. This is very heroic imagery. The second word in MAGA, "America," summons a powerful collective identity, the group to which people belong, the group that is loved and cherished and needs heroic protection at all costs. The third word, "Great," conjures a sense of transcendence, of bigness, of superiority, along with a nostalgic longing for past national exceptionalism. Finally, the fourth word in MAGA, "Again," implies the need to restore a sense of deep time, the need for America's greatness to be eternal, though activating this national nostalgia can prompt derogation or prejudice against outgroups in addition to more positive views of ingroups (Smeekes, 2015; Sedikides and Wildschut, 2019). Thus, "Make America Great Again" is ingeniously crafted to stir people's thirst for a heroic mythology that supplied esteem, bigness, and transcendence in the past and can continue to do so in the future.

If Donald Trump represents the misuse of heroism in fueling nostalgia, then we would be remiss if we failed to underscore the obvious constructive use of heroism in producing psychological benefits. As the initial investigation of Wildschut et al. (2006), close family members and friends comprised much of their participants' nostalgic content. In this article, we have shown how remembering our heroes and reading about heroic actions can offer people protection benefits, enhance their well-being, provide moral modeling, supply mental scripts for positive action, and hand down timeless wisdom. Do heroes themselves confer these benefits or is it the act of nostalgizing about heroes that confers the benefits? The answer may be both, as present-day heroes, influencing us in the here and now, may spur positive emotions and actions. Nostalgic reminiscences about past heroes, in turn, may produce the same benefits, perhaps even to a greater degree if motivations to view history in a particular way are strong. Future research may profit from untangling these possibilities.

We propose that there may be a universal link between the desire to be a hero and one's cultural values, and we further suggest that nostalgia plays a central role in establishing this link (Shahar, 2013; Israeli et al., 2018). Shahar (2013) identified three types of heroic self-representations: self-as-savior, self-as-conqueror, and heroic-identification. These self-images can be psychologically healthy ones if a person enjoys healthy early-life attachments and self-worth. But if early life experiences compromise healthy attachments or self-worth, the self-as-savior identity can emerge that manifests as an over-responsibility to help others. Moreover, a sense of "compulsive heroism" (Yalom, 1980) can emerge in the form of self-as-conqueror, marked by a need to overcome any and all challenges in the service of others. The third heroic self-representation, heroic identification, emerges from the role of societal norms in promoting the myth of heroism that encourages individuals to embrace heroic idols (Campbell, 1949). This third representation is also prone to pathology.

According to Shahar (2013), individuals with all three of these self-identities are likely to draw from cultural heroes as guides for fulfilling their heroic aspirations. Israeli et al. (2018) invoke the Jewish-Israeli myth of the *Tzabar* as an example. The Tzabar is a culturally influential mythical symbol of heroism, representing the heroic qualities of courage, sacrifice, inspiration, victory, solidarity, and camaraderie. On the downside, it is also tinged with sexism, ethnocentrism, militarism, nationalism, and narcissism. Israeli et al. found that heroic self-representations are likely to draw from the Tzabar, the good and the bad elements, particularly when the holders of these self-representations are under duress. Shahar (2013) argued that individuals harboring these three heroic self-representations may be prone to psychopathology under extreme stress, especially those with heroic identification as their self-representation. These latter individuals may deny their stress, viewing any sign of weakness as "unheroic" and inconsistent with the heroic script found in hero mythology. This conceptualization suggests that nostalgia about the wrong kinds of heroes and heroic ideals can heighten psychopathological tendencies.

To test these ideas, Israeli et al. (2018) studied adults during their prolonged exposure to the 2014 Gaza War, "Operation Protective Edge," which occurred in Israel between July 8, 2014 and August 26, 2014. Israeli citizens' emotional states were measured while they endured extensive air strikes, ground fighting in Gaza, and continuous large-scale rocket fire from Gaza to Israel. The results showed that participants' heroic identification affected them emotionally and behaviorally, and sometimes not in healthy ways. While Israeli heroic identification with past heroes has been shown to promote heroic behavior (Brook, 2016), it can also produce significant psychological maladjustment. When confronting the severe psychological challenges of war, people may identify with the ideal heroic image of the person who can conquer any difficult obstacle or who can endure any amount of stress to act heroically. Doing so can lead to actions that save the lives of one's ingroup members, but the consequences of taking on the role of a hero can be significant increases in perceived stress, self-criticism, general psychopathology, maternal overprotection, dissociative depersonalization and absorption, PTSD severity, and attachment anxiety. Thus, the nostalgia-heroism link is likely a reflection of the cultural basis of heroism. Israeli et al. (2018) demonstrated, primarily through the Israeli culture, that cultural values may feed hero-based nostalgia.

Nostalgia as a Mechanism for Promoting Heroism (and Villainy)

Over the past several years, nostalgia researchers have illuminated many behavioral benefits nostalgic feelings, with some of these benefits reflecting precursors to heroism or possible heroic actions themselves. Sedikides and Wildschut (2020), for example, found that nostalgia enhances people's growth-oriented self-perceptions and behavioral intentions. Nostalgia bolsters our desire to pursue self-improvement goals, galvanizes our group loyalty, raises our willingness to help others, reduces our engagement in self-destructive behavior, motivates us to pursue a more idealized self, and boosts self-esteem and self-efficacy. Stephan et al. (2015) reported that individuals high in nostalgia proneness feel inspired more intensely and more often. Moreover, these concomitant benefits of nostalgia are causal, with induced nostalgia heightening both general and specific inspiration for risk-taking, exploratory endeavors. These studies have shown that nostalgia increases feelings of social connectedness, which in turn boosts self-esteem and inspiration. Nostalgia-induced inspiration, moreover, leads to heightened inspiration to pursue important self-goals, which in turn bolsters intentions to pursue those goals. All of these mechanisms of self-empowerment and collective engagement are likely to contribute to people acting in heroic ways.

We propose that nostalgia helps propel people on their personal heroic journeys. Whether intentional or not, Sedikides and Wildschut (2020) use the language of the mythic hero's journey to describe the positive behavioral impact of nostalgia. "Nostalgia," they wrote, "cultivates a planful and future-oriented mindset. It motivates and helps the individual to shape, in part, their destiny" (p. 78). Heroic protagonists in books and movies will often use their nostalgic memories of past personal heroes to propel them into heroic action. A prominent example is Forrest Gump, the eponymous hero who reflects back on his mother's wisdom during times in his life when he seeks direction or needs an inspirational boost. Another powerful example, in the original *Star Wars* film, occurs during the movie's climax when Luke Skywalker invokes the past wisdom of his hero, Obi-Wan Kenobi ("Use the force, Luke"), to extricate himself from a challenging situation. Nostalgia, we now know, is much more than mere emotion. It is grist for the heroic mill.

The Acquisition of Wisdom as a Central Benefit of Nostalgia

We noted earlier that hero stories are packed with transrational phenomena that are best understood in the context of hero storytelling. We argue that heroic tales help us to unravel the mysteries of transrational life events by revealing deep truths, deep time, deep roles, the nature of paradox, and examples of emotional intelligence. Delving into scholarship on the nature of wisdom, we briefly review two measures of wisdom whose scale items reflect the wisdom gleaned from nostalgia, heroism, and these transrational phenomena.

One such measure of wisdom is *The Self-Assessed Wisdom Scale* (Webster, 2003) containing items that reflect four categories: nostalgic recollections, a reliance on the wisdom of others as heroes, the learning experiences of the self as a hero, and the development of emotional intelligence. The scale measures wisdom gleaned from nostalgia by including items such as, "I reminisce quite frequently," "I often think about my personal past," and "Recalling my earlier days helps me gain insight into important life matters." The scale taps into wisdom gleaned from others with items such as "I've learned valuable life lessons from others," and "I like to read books which challenge me to think differently about issues." Wisdom gleaned from one's own heroic journey is

found in items such as, "I have overcome many painful events in my life," and "Reliving past accomplishments in memory increases my confidence for today." Emotional intelligence is measured by such items as, "I am tuned into my emotions," and "I can regulate my emotions when the situation calls for it." In short, the assessment of wisdom from this scale involves mechanisms implicated in the processing of hero narratives involving the interplay of nostalgia, others as heroes, the self as a hero, and emotional intelligence. We believe that it may be fruitful for future researchers to use this scale to investigate the ways in which nostalgia may promote the acquisition of hero-derived wisdom and emotional wisdom.

Another measure of wisdom, *The Three-Dimensional Wisdom Scale* (Ardelt, 2003), operationalizes wisdom along the three dimensions of cognition, reflection, and affect. The cognitive dimension taps into tolerance for ambiguity (e.g., "There is only one right way to do anything"), dogmatism (e.g., "In this complicated world of ours, the only way we can know what's going on is to rely on leaders or experts who can be trusted"), need for cognition (e.g., "I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something"), and attitudes about reality (e.g., "It is better not to know too much about things that cannot be changed"). The reflective dimension contains items measuring perspective-taking (e.g., I try to look at everybody's side of a disagreement before I make a decision"), empathy ("Before criticizing somebody, I try to imagine how I would feel if I were in their place"), and resentment (e.g., "When I look back on what has happened to me, I cannot help feeling resentful"). The affective dimension of the scale includes items measuring compassion ("It's not really my problem if others are in trouble and need help"), acceptance ("I'm easily irritated by people who argue with me"), and helping ("If I see people in need, I try to help them one way or another"). These latter items, from both the reflective and affective components of the scale, would seem to represent measures of emotional intelligence and prosociality.

There is empirical evidence that the *Self-Assessed Wisdom Scale* (Webster, 2003) and the *Three-Dimensional Wisdom Scale* (Ardelt, 2003) are correlated with, and predict, wise behavior. Using both scales, Taylor et al. (2011) found that these two measures of wisdom predicted psychological well-being and the pro-relationship (and psychologically healthy) behavior of forgiveness. Participants' wisdom scores predicted their environmental mastery (e.g., "In general, I feel in charge of the situation in which I live"), personal growth (e.g., "I am not interested in activities that will expand my horizons"), self-acceptance (e.g., "I like most aspects of my personality"), autonomy (e.g., "I tend to be influenced by people with strong emotions"), purpose in life (e.g., "I live one day at a time and do not really think about the future"), positive relations with others (e.g., "I feel like I get a lot out of my friendships"), and making peace with others ("I make peace with people who have hurt me"). Whether nostalgic remembrances can engender wisdom as measured by these scales remains an empirical question.

We conclude this article by revisiting one of the most storied heroes in Western literature, Odysseus, a man whose accomplishment and fame were built on the fusion of both nostalgia and heroism. Odysseus, as vividly revealed in Homer's *Odyssey*, was a prototypical hero on the original hero's journey. A wise leader of Ithaca, and reluctant to leave his family to fight in the Trojan War, he nevertheless exhibited courage and bravery throughout that war. However, he was best known as a cunning strategist. The Greeks would not have won the Trojan War without his recruiting Achilles and especially without his Trojan horse idea, which ultimately won the war. In addition to these agentic qualities, he exhibited more communal heroic traits on the long journey home. He protected his men as best he could from the Cyclopes Polyphemus and the sorceress Circe, he shrewdly navigated between Scylla and Charybdis, and he cleverly managed to listen to the Sirens' song and live to tell the tale. His devotion to his wife and son kept him from giving up after a decade of tribulation. In short, Odysseus exemplified most of the traits of heroism identified by Allison and Goethals (2011) and Kinsella et al. (2015a).

Odysseus also was the original nostalgizer (Hepper et al., 2012; van Tilburg et al., 2018). It's hard to imagine anyone suffering more (algos), striving for a decade to return to his home (nostos). His memories of Ithaca and his loved ones sustained him, inspired him, and motivated him to overcome immense challenges, temptations, and tragedies. He even turned down Calypso's offer of immortality so that he could return to his family. We argue that it is no coincidence that nostalgia and heroism are intertwined in Odysseus. It was Odysseus' nostalgia that catalyzed and motivated his extraordinary heroism during his decade-long journey home. We also emphasize that the journey of Odysseus laid the groundwork for future iconic heroes who longed to go home, from Dorothy in *The Wizard of Oz* to Simba in *The Lion King*. Nostalgia strikes at the heart of heroism. We hope that our analysis and integration of these two phenomena prove useful to future investigators.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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The Ties That Bind: University Nostalgia Fosters Relational and Collective University Engagement

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Does nostalgia for one's time at university predict current intentions to engage with the university? In Study 1, United States participants' nostalgia for their university experience (university nostalgia) at a southern public university predicted stronger intentions to socialize with fellow alumni, attend a future reunion, volunteer for their university, and donate money to their university. Study 2 replicated these findings with alumni from a northeastern private university, and extended them by finding that the links between university nostalgia and university engagement emerged even when controlling for the positivity of university experience. In both studies, feelings of university belonging mediated most of the associations between university nostalgia and university engagement. In Study 2, the positivity of the university experience moderated the relation between university nostalgia and two indices of university engagement. Specifically, university nostalgia was more strongly associated with intentions to attend a reunion and donate money among those who had a relatively negative university experience. Nostalgia for one's university past predicts future engagement with the university as well as its members.

Keywords: nostalgia, volunteering, donation, social connectedness, subjective well-being, reunions, identity

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INTRODUCTION

Until the late 20th century, nostalgia—a bittersweet emotion associated with somewhat rosy recollections of the past—was characterized in both historical and empirical works as a mental affliction akin to homesickness (Sedikides et al., 2004). However, in recent decades, psychological research has distinguished distress-related emotions—such as homesickness and separation anxiety—from the wistful, warm, and sentimental nature of nostalgia. For example, participants' descriptions of nostalgic memories are predominantly characterized by positive affect and feelings of connectedness with significant others (Wildschut et al., 2006). In addition, nostalgia acts as a psychological buffer or antidote against social disconnection and negative affect. For example, nostalgic memories are more likely to be evoked while experiencing negative affect (Wildschut et al., 2006) or when feeling lonely (Zhou et al., 2008). When one endures aversive states, nostalgic memories act as a repository of positive affect, self-regard, and social connectedness (Wildschut et al., 2011; Wildschut and Sedikides, 2020). In particular, nostalgic memories reset psychological equilibrium through enhancing symbolic connections with others (Sedikides et al., 2008a; Abeyta et al., 2015).

Nostalgia motivates action (Sedikides and Wildschut, 2020). It is an approach-oriented emotion (Van Tilburg et al., 2018) that can increase inspiration (Stephan et al., 2015), risk-taking (Zou et al., 2019), and the pursuit of important life goals (Sedikides et al., 2018). Nostalgia can fuel behavioral intentions and actual behavior in areas as varied as purchasing food with nostalgic labels (Zhou et al., 2019) or engaging with favorite sports teams, such as visiting a sports town (Chang et al., 2019).

Most germane to our work, nostalgic recollections satisfy the need for social connection not only by buffering against loneliness, but also by motivating favorable intentions and behaviors toward others. Nostalgia strengthens intentions to support one's ingroup (Wildschut et al., 2014) and increases charitable donations (Zhou et al., 2012). Furthermore, when individuals become nostalgic for their ingroup, they bestow unique benefits on it, including tangible monetary sacrifices to support its members (Wildschut et al., 2014). We sought to investigate the link between nostalgia at the collective level and social orientations as well behaviors toward an important social group: one's university alma mater.

University nostalgia is the wistful longing for and recollection of the formative university years. Young adulthood is a particularly rich source of nostalgia (Rubin and Schulkind, 1997; Batcho, 1998; Wildschut et al., 2006): individuals display heightened recall from this life era in particular (i.e., the reminiscence bump; Koppel and Berntsen, 2015), and they experience nostalgia for their adolescence *via* music, photos, time with old friends, and more (Barrett et al., 2010; Sedikides et al., 2015b). College is replete with the cherished social connections and momentous events that form the wellspring of nostalgic memories (Holak and Havlena, 1992; Wildschut et al., 2006; Madoglou et al., 2017). The university experience is for most a time to explore novel ideas, form numerous close relationships, and try new activities, all of which can be fodder for future nostalgia *via* "anticipated nostalgia" (Cheung et al., 2020) and savoring (Biskas et al., 2019). United States universities in particular may foster powerful memories for individuals who move away to college, live in a quintessential college town, or embrace an active college sports culture. University experiences vary, of course, for individuals, universities, and cultures, but university nostalgia likely is potent across a range of cultures due to its unique characteristics and the life stage involved (Rathbone et al., 2017).

COLLECTIVE NOSTALGIA, GROUP COLLECTIVISM, AND RELATIONAL COLLECTIVISM

A tripartite view of the self—individual, relational, and collective—has been a generative framework for empirical research (Sedikides and Brewer, 2001; Sedikides et al., 2013), including self-relevant emotions. The individual self, the unique set of characteristics (e.g., traits, history, and worldview) that sets one individual identity apart from others, has attracted the bulk of attention empirically (in part because it tends to be prioritized over the other two; Gaertner et al., 2012; Nehrlich et al., 2019), particularly regarding nostalgia (i.e., personal nostalgia; Sedikides et al., 2015b). The relational self refers to identification with dyadic relationships and close-knit, interdependent groups like families. It includes relationship-specific roles, memories, traits, and goals. The collective self refers to identification with larger social groups and categories (Sedikides et al., 2013). It includes emphasis on a shared history, usually one that differentiates the ingroup from relevant outgroups [e.g., national nostalgia; (Smeekes et al., 2018)]. Relational nostalgia (Hepper et al., 2012b; Mallory et al., 2018) and collective nostalgia (Wildschut et al., 2014; Smeekes, 2015) have only recently been explored empirically.

Intergroup emotions theory (IET; Mackie and Smith, 1998, 2018) proposes that intergroup emotions are an inevitable byproduct of individuals considering their group identities. Membership in important groups elicits group-level counterparts to emotions that people experience as individuals. Group norms, practices, and history influence the experience and regulation of a host of intergroup emotions, including nostalgia. Recent work defined *collective nostalgia* as "the nostalgic reverie that is contingent upon thinking of oneself in terms of a particular social identity or as a member of a particular group. . .and concerns events or objects related to it" (Wildschut et al., 2014, p. 845), and established collective nostalgia as an intergroup emotion according to the principal tenets of IET. Collective nostalgia can be distinguished from its individual-level counterpart (i.e., personal nostalgia; Sedikides and Wildschut, 2019; Abakoumkin et al., 2020)and, and collective nostalgia regulates and directs attitudes and behavior toward the collective. For example, individuals who experienced collective nostalgia by reflecting on a shared memory felt more positively about their group, reported stronger motivation to approach ingroup members, and were more willing to make a financial sacrifice to punish anti-ingroup behavior (Wildschut et al., 2014).

Virtually all collective nostalgia research has centered on national nostalgia (Smeekes et al., 2014; Smeekes, 2015; Martinovic et al., 2017). Smeekes (2015) hypothesized that national nostalgia renders salient an "essentialist national ingroup prototype" (p. 64) that limits who is considered part of the national identity. Greater national nostalgia has been associated with a stronger ethnic national identity (Smeekes, 2015) and more negative attitudes toward outgroups (Smeekes et al., 2014; Smeekes, 2015). However, collective nostalgia also can spark greater ingroup loyalty, such as a preference for ingroup (e.g., domestic vs. foreign) consumer products (Dimitriadou et al., 2019).

Recent work on collectivism has distinguished between *group collectivism* and *relational collectivism* to address conceptual and empirical problems in the literature on individualism and collectivism (Brewer and Chen, 2007). Group collectivism refers to social identification with larger, abstract, and depersonalized social groups like nationality or race, and is characterized by a sense of group loyalty and conformity to group norms. Relational collectivism refers to social identification at the small-network level (e.g., family and friends), and is characterized by concerns with harmony, reciprocity, cohesion, and responsiveness to others. Past research on collective nostalgia has not distinguished

between relational collectivism and group collectivism [but see Abakoumkin et al. (2020)], and has focused almost exclusively on group collectivism, primarily national nostalgia. We propose to fill a gap in the literature by studying a form of collective nostalgia at the relational level: university nostalgia. Might nostalgia for one's university days be associated with social orientations and behavioral intentions in the present and future?

Two prior studies (Wildschut et al., 2014, Studies 1 and 2) examined university nostalgia, and found that those who recalled a shared university memory (relative to a personal memory) felt more positively about their fellow alumni. Those experiencing university nostalgia also reported a stronger approach orientation and stronger behavioral intentions to invest time supporting their university by participating in a publicity campaign. We extended this past work in several ways. We examined intentions to engage with the university community at both the relational (i.e., dyadic) and collective levels. We assessed intentions to volunteer to serve the university in various ways (while controlling for past volunteering). We also assessed intentions to donate money to the university (while controlling for past donations as well as income level). In addition, we tested whether university nostalgia would influence university engagement at the dyadic level. Would university nostalgia be linked to intentions to connect with fellow alumni? We included two measures of dyadic engagement: intention to attend a future reunion and time spent with fellow alums (while controlling for past engagement).

PROPOSED MEDIATORS: SOCIAL CONNECTEDNESS, IDENTIFICATION, AND SELF-CONTINUITY

How might university nostalgia be linked to university engagement? That is, what is it about feeling nostalgic for university life that might explain intentions to be more engaged with the university and fellow community members? Past research on nostalgia suggests three promising potential mediators: social connectedness, group identification, and self-continuity.

Social Connectedness

Nostalgic memories are social (Wildschut et al., 2006). Humans have a fundamental need to belong (Baumeister and Leary, 1995). Individuals go to great lengths to establish and maintain close relationships and social networks, and loneliness and social exclusion or ostracism are subjectively distressing, as well as interpersonally disruptive (Twenge et al., 2002; Baumeister et al., 2005). Individuals who experience nostalgia feel more loved and connected (Reid et al., 2015), more securely attached (Wildschut et al., 2010), and more socially supported (Zhou et al., 2008). They express stronger social approach goals and even sit closer to strangers (Stephan et al., 2014). Lonely individuals are more likely to bring to mind nostalgic memories, which reduce their loneliness *via* increased feelings of social support (Zhou et al., 2008). In addition to this regulatory function, social connectedness mediates downstream effects of nostalgia. Nostalgic (vs. ordinary) memories enhance optimism (Cheung et al., 2013) and inspiration (Stephan et al., 2015) by way of social connectedness.

Group Identification

Prior research suggests that collective nostalgia culminates in positive ingroup outcomes by increasing group identification. Wildschut et al. (2014) showed that collective nostalgia (compared to a control group) strengthened participants' willingness to volunteer their time for a university publicity campaign, and this effect was mediated by ingroup identification (indexed by the Collective Self-Esteem Scale; Luthanen and Crocker, 1992). Similarly, Dimitriadou et al. (2019) found that collective nostalgia augmented participants' preference for ingroup consumer products (i.e., domestic country bias) *via* increased group identification (also indexed by the Collective Self-Esteem Scale). Thus, we propose that group identification may serve as a mediator between university nostalgia and group engagement. At the collective level, group identification and social connectedness may overlap considerably. Group identification by definition entails seeing oneself as part of the collective, and sharing characteristics and goals with other group members. Accordingly, individuals who identify strongly with a group will manifest a stronger sense of social connectedness to other group members.

Self-Continuity

Self-continuity refers to a sense of coherence and connection of one's self across time (Sedikides et al., 2015a). This enhanced connection and similarity of the past self and present self can pertain to individual as well as to collective selves (Sedikides et al., 2008b). Nostalgia, induced in different ways, has been shown to enhance self-continuity. For example, individuals who experienced greater nostalgia by smelling familiar scents (Reid et al., 2015), recalling nostalgic autobiographical memories (Abakoumkin et al., 2019), or reading the lyrics to nostalgic songs (Sedikides et al., 2016) felt more continuity in their lives. Self-continuity, in turn, is associated with positive outcomes, such as eudaimonic wellbeing (Sedikides et al., 2016) and meaning in life (Van Tilburg et al., 2019). We reasoned that self-continuity would mediate the effect of university nostalgia on positive engagement with the university and its members.

OVERVIEW AND HYPOTHESES

We conducted two studies, one with graduates of a public university in the southern United States, and one with graduates of a private northeastern university in the northeastern United States. We hypothesized that university nostalgia would be associated with university engagement at the relational and collective levels. To be specific, we predicted that greater university nostalgia would be associated with greater engagement with fellow alumni (relational outcomes) and greater engagement with the university (collective outcomes) (Hypothesis 1). We also hypothesized that these links would be mediated by social connectedness, identification with the university, and self-continuity (Hypothesis 2).

STUDY 1

Method

Participants

Participants were 310 alumni (229 women, 62 men, one other gender, and 18 refused to answer) from a large, public United States university, who completed the survey online for a chance to win one of three gift cards. Participants' age ranged from 21–79 years (M = 40.95, SD = 12.89). They were 80% White, 6.1% African American/Black, 6.7% East/South Asian, and 7.2% Multiracial/Other. Participants' yearly household income ranged from $0–$1,000,000, with a median income of $100,000 ($M$ = $138,498, SD = $117,428).

Procedure and Measures

After indicating their year of graduation, participants responded to the survey measures and behavioral engagement items reported below. At the end of the session, they were given the opportunity to enter a gift card raffle as compensation.

University Nostalgia

To measure university nostalgia, we used a university-specific version of the Southampton Nostalgia Scale (Sedikides et al., 2015b; Wildschut and Sedikides, 2021), which assesses both frequency and importance of nostalgic engagement. We adjusted slightly the wording for nostalgia to refer to participants' alma matter. Sample items include: "How often do you experience nostalgia about X University" and "How valuable to you is feeling nostalgic for X University?" (1 = *not at all*, 7 = *very much*). Cronbach's alpha was 0.95.

Connectedness to University Community

We measured participants' connectedness with their university community with three items used in previous research to assess social connectedness (Wildschut et al., 2006; Hepper et al., 2012a). The items were: "I feel like I'm a part of the X University community," "I feel that I am a part of the greater X University 'family', " and "I still maintain strong ties with friends from X University" (1 = *strongly disagree*, 6 = *strongly agree*). Cronbach's alpha was.82.

Identification With University Community

We measured participants' identification with their university community with three items adapted from the Social Identification Scale (Tarrant et al., 2004). We selected three items from the original scale in order to keep the online study as concise as possible. The items were: "I identify strongly with X University," "Being a X University graduate is a significant part of my identity," and "Feeling more identified with X University is important to me" (1 = *strongly disagree*, 6 = *strongly agree*). Cronbach's alpha was 0.91.

Self-Continuity

We measured self-continuity with participants' university-aged selves with the 4-item State Self-Continuity Scale (Sedikides et al., 2015a). We modified slightly the items to refer to participants' university-aged selves. Sample items include: "I feel connected with my past at X University" and "I feel that there is continuity between my life at X University and my current life" (1 = *strongly disagree*, 6 = *strongly agree*). Cronbach's alpha was 0.81.

Socializing With Other Alumni

Participants indicated their interest in socializing with other alumni by responding to the item: "How much do you plan to socialize with other alumni from your university in the next year?" (1 = *not at all*, 7 = *all the time*). Participants also indicated socializing tendencies by responding to the item: "How often do you socialize with other alumni from your university?" (1 = *never/almost never*, 7 = *once a week or more*).

Volunteering

Participants reported their willingness to volunteer for their alma mater by responding to the items: "If asked by someone from University X, would you be willing to volunteer for the university in the near future?" (*yes/no* response) and "If so, how many hours would you be willing to volunteer?" (numeric response). Participants also reported prior volunteering by responding to the items: "Have you ever volunteered for your alma mater after you graduated (for example, recruitment events or service projects)?" (*yes/no* response) and "If so, approximately how many total hours have you volunteered for your alma mater?" (numeric response).

Reunion Interest

Participants indicated their interest in attending an upcoming class reunion by responding to the item: "How much interest do you have in attending the next reunion?" (1 = *no interest at all*, 7 = *extremely interested*). Participants also reported prior reunion attendance by responding to the item: "How many official reunions have you attended at X University?" on a numeric scale. Lastly, participants stated the total number of their class reunions held (We needed this information to calculate a ratio of reunion attendance).

Charitable Donations

Participants responded to several measures relating to charitable donations to their alma mater. They reported willingness to donate to the university by responding to the items: "If asked by someone from University X, would you be willing to donate to them in the near future?" (*yes/no* response) and "If so, how much do you think you would be willing to donate?" (numeric response). They also reported whether they had ever donated to their alma mater in the past (*yes/no* response) as well as the largest gift amount, average gift amount, and number of years they had previously donated (numeric responses).

Demographics

Participants indicated their gender, ethnicity, age, household income, where they currently lived, whether they had children currently attending their alma mater, whether their significant other was also an alum, and the number of university friends with whom they regularly kept in contact.

Results

Analysis Strategy and Descriptive Statistics

We checked all continuous dependent variables for linearity and normality of residuals. We log-transformed the variables of income, planned and average yearly hours of volunteering, and planned and average donation amount, as they were positively skewed and did not meet assumptions for normality. Following these transformations, all variables met assumptions for linear regression. Additionally, we screened data for inattentive responding *via* three questions (e.g., *Choose "very strongly" for this answer*). We removed seven participants for missing at least two attention check questions.

Table 1 displays descriptive statistics of Study 1 variables, and **Table 2** displays bivariate correlations among Study 1 variables. Given that the connectedness and identification measures were highly correlated [$r(308) = 0.78$, $p < 0.001$], we combined them by averaging all six items into a single measure that we label *university belonging*. Cronbach's alpha for this composite measure was 0.91.

To assess the relation between university nostalgia and alumni engagement outcomes, we ran hierarchical regressions with covariates (prior engagement and year of graduation in all models, and log-transformed income for all models (except subjective well-being and socializing interest) in step 1, and university nostalgia in step 2. These models assessed the association of university nostalgia with alumni engagement, above and beyond graduation year, income, and prior engagement in the behavior. We controlled for graduation year to account for the effect of time on participants' level of nostalgia. We controlled for income to account for the possibility that those with higher incomes have more resources to take time off for volunteering or visiting other alumni, as well as donating to their alma mater. We controlled for prior engagement, as it has been shown to be a strong predictor of future engagement in related behavior (Ouellette and Wood, 1998). We summarize these regression models in **Table 3**.

After establishing the relation between nostalgia and engagement, we assessed the role of potential mediators: connectedness to the college community, identification with the college community, and self-continuity with participants' college-aged selves. For all mediation analyses, we controlled for graduation year and past engagement in alumni behavior. We also controlled for income in the cases of volunteering, reunion interest, and alumni donations. We conducted mediation analyses with Hayes' PROCESS macro v3.4 (Hayes, 2018). We calculated bootstrapped confidence intervals of indirect effects using 5,000 re-samplings. For indirect effects of odds ratios (OR), we considered confidence intervals including 1.0 as non-significant. For indirect effects of continuous variables (beta coefficients), we considered confidence intervals including 0 as non-significant.

TABLE 1 | Descriptive statistics of study 1 variables.

Variables	Mean/%	SD
1. University Nostalgia	4.77	1.39
2. Graduation year	1999	13.08
3. Income (thousands)	$138.5	$117.4
4. Connectedness	5.22	1.50
5. Identification	5.32	1.54
6. Belongingness	5.67	1.43
7. Self-continuity	4.55	1.00
8. Past socialization	4.55	1.91
9. Plans to socialize	4.58	1.83
10. Past volunteerism (hours)	25.10	51.11
11. Willingness to volunteer (yes/no)	70.0%	
12. Willingness to volunteer (hours)	4.17	15.74
13. Past reunion attendance (number of reunions)	0.27	0.71
14. Future reunion interest	3.69	2.02
15. Past donation - avg. gift (dollars)	$172	$466
16. Past donation - largest gift (dollars)	$495	$1892
17. Willingness to donate (yes/no)	58.7%	
18. Willingness to donate (dollars)	$536	$5,746

Median income = $100,000. University Nostalgia and Reunion Interest variables are on a 1 (low) to 7 (high) rating scale. Connectedness, identification, self-continuity, and past/planned socialization variables are measured on a 1 (low) to 6 (high) rating scale.

Socializing With Other Alumni

As shown in **Table 3**, university nostalgia predicted interest in socializing with other alumni, $\beta = 0.23$, $p < 0.001$, $R^2\Delta = 0.04$. First, we conducted simple mediation analyses to assess whether university belonging or self-continuity accounted for the relation between nostalgia and socializing with other alumni. Assessed separately, we found a significant indirect effect (denoted as *ab*) *via* university belonging [*ab* = 0.29., 95% CI = (0.16,0.41)]. Self-continuity did not significantly mediate the relation between university nostalgia and socializing [*ab* = 0.03, 95% CI = (−0.01,0.08)]. When we tested both mediators in a parallel mediation model, university belonging uniquely accounted for the relation between university nostalgia and socializing [*ab* = 0.13., 95% CI = (0.02,0.34)]. Self-continuity did not mediate the relation [*ab* = 0.02., 95% CI = (−0.03,0.07)].

Volunteering

The majority of respondents indicated they would be interested in volunteering for the university if asked to do so (**Table 1**). As shown in **Table 3**, we found in a logistic regression that university nostalgia predicted greater likelihood of being willing to volunteer for the alma mater over and above graduation date, income, and previous frequency of volunteering, $B = 1.49$, OR = 4.45, $p < 0.001$. University nostalgia also predicted willingness to volunteer a greater number of hours (log transformed), $\beta = 0.46$, $p < 0.001$, and $R^2\Delta = 0.25$.

Assessed in separate simple mediation models, university belonging significantly mediated the relation between nostalgia and willingness to volunteer for the alma mater [*ab* = 1.33, 95% CI = (1.01, 1.86)]. Self-continuity did not mediate the relation in a simple mediation [*ab* = 0.94, 95% CI = (0.78, 1.09)]. When we tested both mediators in a parallel mediation model, university belonging again was a significant mediator of the relation between nostalgia and willingness to volunteer [*ab* = 1.55, 95% CI = (1.01, 2.66)]. Self-continuity did not mediate the relation [*ab* = 0.94., 95% CI = (0.78, 1.09)].

TABLE 2 | Descriptive statistics and bivariate correlations among study 1 variables (N = 310).

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. University Nostalgia	–																	
2. Graduation year	−0.15*	–																
3. Income	−0.03	0.10	–															
4. Connectedness	0.63***	−0.04	−0.08	–														
5. Identification	0.76***	−0.13*	−0.15*	0.77***	–													
6. Belongingness	0.74***	−0.10	−0.12	0.94***	0.94***	–												
7. Self-continuity	0.49***	−0.04	−0.13*	0.57***	0.49***	0.56***	–											
8. Past socialization	0.26***	0.02	0.05	−0.12*	−0.18**	−0.16**	−0.11	–										
9. Plans to socialize	0.38	0.09	0.12	−0.09	−0.05	−0.07	−0.12*	−0.05	–									
10. Past volunteerism	0.09	−0.15	−0.08	0.21*	0.15	0.19	0.15	0.00	−0.24*	–								
11. Future volunteerism (y/n)	0.21**	0.05	−0.02	0.01	0.00	0.00	0.08	0.03	0.22***	−0.16	–							
12. Future volunteerism amount	0.20*	−0.02	0.02	0.00	−0.02	−0.01	0.03	0.02	0.24***	−0.13	0.82***	–						
13. Past reunion attend.	0.11	−0.12	−0.09	0.17*	0.16	0.17*	0.21**	−0.08	−0.03	−0.11	0.08	0.15	–					
14. Future reunion interest	0.46**	−0.03	0.03	0.03	−0.04	−0.01	0.07	−0.06	0.42***	−0.18	0.34***	0.35***	0.11	–				
15. Past average gift amount†	0.05	0.02	−0.05	0.07	0.04	0.06	0.08	0.01	−0.09	0.08	0.01	−0.03	0.24*	−0.01	–			
16. Past largest gift amount†	0.09	0.06	0.02	0.10	0.07	0.09	0.11	0.08	−0.09	0.14	−0.05	−0.06	0.19	0.00	0.75***	–		
17. Future willing to donate (y/n)	0.30***	−0.18**	−0.08	0.28***	0.30***	0.31***	0.15*	0.04	−0.07	0.06	−0.02	−0.03	0.07	−0.01	0.10	0.12	–	
18. Future willing donation amount†	0.25***	−0.15**	−0.03	0.28***	0.29***	0.30***	0.15**	0.05	−0.03	0.01	0.00	−0.01	0.13	0.01	0.09	0.08	0.86***	–

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, and † variable log-transformed due to strong positive skewness.
Univ, university; Attend., attendance.

TABLE 3 | Regression models for study 1 alumni engagement outcomes.

Dependent variable (Continuous)	Predictor	Step 1						Step 2					
		β	*p(β)*	*F*	*df*	*p(F)*	R^2_{adj}	β	*p(β)*	*F*	*df*	*p(F)*	R^2_{adj}
Socializing with other alumni	Graduation year	−0.10	0.028	149.48	2, 288	<0.001	0.51	−0.03	0.474	118.29	3, 287	<0.001	0.55
	Past socialization	0.74	<0.001					0.66	<0.001				
	University Nostalgia							0.23	<0.001				
Volunteering (hours)	Graduation year	−0.26	0.032	1.82	3, 71	0.152	0.03	−0.22	0.048	6.79	4, 70	<0.001	0.28
	Past volunteering amount	0.05	0.660					0.02	0.853				
	Income	−0.14	0.249					−0.15	0.160				
	University Nostalgia							0.46	<0.001				
Reunion interest	Graduation year	−0.05	0.480	6.15	3, 205	<0.001	0.07	0.01	0.816	17.82	4, 204	<0.001	0.24
	Past reunion attendance	0.28	<0.001					0.23	<0.001				
	Income	−0.07	0.294					−0.04	0.476				
	University Nostalgia							0.43	<0.001				
Donation (amount)	Graduation year	−0.06	0.430	14.22	3, 166	<0.001	0.19	0.02	0.820	15.23	4, 165	<0.001	0.25
	Past donation average amount	0.34	<0.001					0.31	<0.001				
	Income	0.19	0.010					0.22	0.002				
	University Nostalgia							0.26	<0.001				
		OR	***p(OR)***	**Model χ2**	***df***	***p*(χ2)**	***Nagelkerke* R^2**	***OR***	***p(OR)***	**Model χ2**	***df***	***p*(χ2)**	***Nagelkerke* R^2**
Volunteering (y/n)	Graduation year	0.88	0.286	2.38	3	0.498	0.06	0.98	0.548	24.81	4	<0.001	0.52
	Past volunteering amount	1.00	0.929					0.99	0.391				
	Income	0.84	0.160					0.99	0.169				
	University Nostalgia							4.45	<0.001				
Donation (y/n)	Graduation year	1.01	0.719	8.66	3	0.03	0.07	1.00	0.940	21.65	4	<0.001	0.17
	Past donation frequency	1.00	0.406					1.00	0.490				
	Income	1.00	0.018					1.01	0.008				
	University Nostalgia							1.59	0.001				

We next examined mediation of the relation between nostalgia and the log-transformed number of hours participants were willing to volunteer. Assessed in separate simple mediation models, neither university belonging [ab = 0.09, 95% CI = (−0.01,0.19)] nor self-continuity [ab = 0.003, 95% CI = (−0.05,0.05)] significantly mediated the relation between nostalgia and number of hours volunteered for the alma mater. When both mediators were tested in a parallel mediation model, neither university belonging [ab = 0.10, 95% CI = (−0.01,0.08)] nor self-continuity [ab = −0.01, 95% CI = (−0.06,0.04)] uniquely mediated the relation.

Reunion Interest

Greater university nostalgia predicted increased interest in attending an upcoming university class reunion, β = 0.46, $p < 0.001$, and $R^2\Delta = 0.21$. Assessed in separate simple mediation models, both university belonging [ab = 0.18, 95% CI = (0.02,0.35)] and self-continuity [ab = 0.07, 95% CI = (0.01,0.16)] significantly mediated the relation between nostalgia and interest in attending the next class reunion. When we tested both mediators in a parallel mediation model, neither university belonging [ab = 0.14, 95% CI = (−0.03,0.31)] nor self-continuity [ab = 0.06, 95% CI = (−0.02,0.14)] uniquely accounted for the relation.

Charitable Donations

Slightly over half of respondents indicated they would be willing to donate some amount to the university if asked to do so (**Table 1**). University nostalgia predicted greater willingness to donate to the alma mater, B = 0.43, OR = 1.53, $p < 0.001$. Participants higher in university nostalgia indicated willingness to donate a greater amount to their alma mater (log-transformed), β = 0.26, p = 0.001, $R^2\Delta = 0.06$.

We first examined mediation of the relation between university nostalgia and willingness to donate to the alma mater. In simple mediation models, we found no significant indirect effects of either university belonging [ab = 0.15, 95% CI = (−0.10,0.43)] or self-continuity [ab = 0.04, 95% CI = (−0.09,0.17)]. When we tested both mediators in a parallel mediation model, neither university belonging [ab = 0.14, 95% CI = (−0.13,0.16)] nor self-continuity [ab = 0.02, 95% CI =(−0.13,0.16)] mediated the relation.

Next, we examined mediation of the relation between university nostalgia and the log-transformed amount that participants were planning to donate. In a simple mediation model, university belonging was a significant mediator [ab = 0.15, 95% CI = (0.003,0.30)]. Self-continuity did not significantly mediate the relation [ab = 0.05, 95% CI = (−0.03,0.13)]. When we tested both mediators in a parallel mediation model, neither university belonging [ab = 0.12, 95% CI = (−0.06,0.11)] nor self-continuity [ab = 0.03, 95% CI = (−0.06,0.11)] uniquely mediated the relation.

Discussion

Study 1 tested hypotheses concerning the link between university nostalgia and intentions to engage with one's alma mater. Graduates higher in university nostalgia were more interested in socializing with fellow graduates, willing to volunteer for their alma mater, interested in attending a future reunion, and willing to donate money to the university, supporting Hypothesis 1. Importantly, these links were robust, remaining significant even when controlling for graduation year, relevant past engagement, and income. People who feel more nostalgic for their past at university intend in the future to be more engaged with the university, as well as with fellow alumni. In simple mediation analyses, university belonging mediated the relation between university nostalgia and all measures of university engagement, except willingness to donate money. In parallel mediation analyses (with self-continuity), university belonging remained a significant mediator of university nostalgia's relation with interest in socializing and willingness to volunteer. These findings provide partial support for Hypothesis 2.

These findings expand on prior university nostalgia research (Wildschut et al., 2014), underscoring the link between nostalgia on the one hand and approach orientation as well as social engagement on the other (Sedikides and Wildschut, 2019, 2020). More broadly, the findings expand understanding of collective nostalgia and behavioral intentions toward the collective. Although these findings are correlational, prior experimental work has established that inducing collective nostalgia can energize positive behavioral intentions directed toward the group (Wildschut et al., 2014).

Study 1 had some limitations, which Study 2 intended to address. The positivity of past university experiences likely correlates both with university nostalgia and the intent to engage with one's university. Hence, it is important to examine whether the links between university nostalgia and university engagement are unique and remain significant even when controlling for positivity of past university experiences. Second, a potential limitation of the reunion-attendance measure in Study 1 is that reunions only occur once or twice in a decade at most, and attendance could be subject to many extraneous influences (e.g., scheduling conflicts). However, choosing to visit one's alma mater is not subject to these constraints. Thus, we added a question about non-reunion visits to the university to improve this measure of university engagement.

A third potential weakness is that we did not assess the full range of mediators suggested by the literature. Study 1 examined two mediators, one of which (i.e., self-continuity) played a negligible role. In Study 2, we therefore examined the role of an additional mediator: meaning in life. Nostalgia serves existential functions, such as buffering individuals from the anxiety associated with thinking about their own death (Juhl et al., 2010). Of particular relevance, nostalgia instills a greater sense of meaning in life (Routledge et al., 2011; Reid et al., 2015) and protects individuals from existential threats (Sedikides and Wildschut, 2018). Nostalgia for close others and personally important events helps infuse the present with purpose and significance (Van Tilburg et al., 2019). Furthermore, meaning in life mediates the influence of nostalgia on subjective vitality and intentions to pursue one's important goals (Routledge et al., 2008; Sedikides et al., 2018). On this basis, we hypothesized that meaning in life

would mediate the relation between university nostalgia and university engagement.

Finally, Study 1 focused on the collective level, and so did not assess individual-level outcome. In Study 2, we added subjective well-being to extend the range of outcome variables. Personal nostalgia conduces to subjective well-being (Sedikides et al., 2016; Hepper et al., 2020), and we examined whether university nostalgia is linked to similar subjective well-being benefits. We operationalized subjective well-being as feelings of vitality (Ryan and Frederick, 1997).

STUDY 2

Study 1 provided preliminary evidence that university nostalgia is associated with stronger engagement with the university and fellow alumni. It further offered suggestive support for the proposed mediating role of university belonging, but not the role of self-continuity. These findings, however, are in need of replication and elaboration. We pursued these objectives in Study 2. The key objectives were to replicate Study 1 and extend it to address issues we mentioned above such as measuring non-reunion visits, testing meaning in life as a mediator, and assessing subjective well-being (vitality).

In addition, we addressed the role of past university experiences as a control variable. Moreover, we explored whether the positivity of past university experiences would moderate the links of university nostalgia with indices of subjective well-being and university engagement. One possibility is that these links are stronger for individuals who had many positive experiences at university, as they might have a larger store of nostalgic memories that they could seek to recreate *via* current university engagement. Another, more intriguing, possibility is that these links are stronger for individuals who had a relatively negative overall university experience, as the few nostalgic memories that they do cherish assuage their overall negative experience, thereby protecting and sustaining subjective well-being and engagement.

Method

Participants

One hundred and sixty-one alumni of a private, United States college from two consecutive annual student cohorts participated in an online survey (77 women, 69 men, 15 refused to answer). The sample was 83.2% Caucasian, 3.1% African American or Black, 2.5% Asian or Asian-American, and 11.3% other ethnicity. Participants did not record their specific age, but all indicated that they graduated in the late 1980s. The lead author entered participants into a raffle to win one of three $50 gift certificates to the university's online bookstore.

Procedure and Measures

Participants completed an online survey through SurveyMonkey. They responded to the measures below and offered the opportunity to enter their email (separately from their data) for the gift card raffle.

University Nostalgia

The measure of university nostalgia was the same as in Study 1, except for the name of the alma mater (now "X College"; 1 = *not at all*, 7 = *very much*). Cronbach's alpha was 0.83.

Belonging With University Community

We measured belonging with the university community using the same 6-item composite scale as in Study 1 (1 = *not at all*, 7 = *very much*). Also as in Study 1, the social connectedness and group identification scales were highly correlated [$r(159) = 0.78$]. Cronbach's alpha was 0.92.

Self-Continuity

We measured self-continuity with the 4-item scale of Study 1 (1 = *not at all*, 7 = *very much*). Cronbach's alpha was 0.88.

Meaning in Life

We measured meaning in life with an adapted version of the Meaning in Life Questionnaire (Steger et al., 2006). We shortened the original 10-item scale to eight items focusing on felt presence of meaning in life. Sample items include: "I feel life has a purpose when I think of X College or am at X College" and "I feel a sense of meaning when X College comes to mind" (1 = *absolutely untrue*, 7 = *true*). Cronbach's alpha was 0.95.

Past University Experiences

Participants reported how positive their university experiences were on a 4-item scale that we created for the purpose of this study (1 = *not at all*, 7 = *completely*). Sample items include: "How positive overall emotionally was your X College experience?" and "To what extent did you feel that you weren't fully accepted at X College?" (reverse-scored). Cronbach's alpha was 0.77.

Subjective Well-Being

We measured subjective well-being with the Subjective Vitality Scale (Ryan and Frederick, 1997). This 7-item scale assessed the extent to which participants felt full of energy and alive. Sample items include: "I look forward to each new day" and "I have energy and spirit" (1 = *not at all*, 7 = *completely*). Cronbach's alpha was 0.90.

Socializing With Other Alumni

Participants identified their interest in socializing with other alumni by responding to the item: "How much do you plan to socialize with fellow X College alums in the coming year?" (1 = *not at all*, 7 = *a great deal*).

Informal Visits to Campus

Participants also indicated how often they visited campus by responding to the item: "How many times have you visited College X informally (not a reunion) since your graduation?" In particular, they were instructed to enter a number no less than 0.[1]

[1]Responses ranged from 0 to 1,000, with three respondents reporting greater than 100 visits. We winsorized these three participants to create a "100 + " interval bin in order to reduce right skewness in the variable.

Volunteering. Participants responded to the question "How much time do you plan to donate to the College in the form of serving the College or your class, service projects, etc., in the next year?" (1 = *not at all*, 7 = *a great deal*).

Reunion Interest

We measured reunion attendance and interest with two items reflecting past attendance and future interest in class reunions. These were: "How much interest do you have in attending the next reunion?" and "How many official reunions have you attended at College X?" (1 = *not at all*, 7 = *a great deal*). (Given that we recruited all participants from the same two adjacent class years, we did not need to ask about the overall number of reunions held by participants' university class).

Charitable Donations

Participants responded to several measures relating to charitable donations in the form of numeric amounts in United States dollars. These included: amount they intended to donate that year ("How much money do you plan to give to College X this year?"); average donation amount ("What was your average monetary gift to College X since you graduated?"); and largest donation amount ("What was your largest gift to College X since you graduated?").

Demographics

Participants reported their gender, ethnicity, and class year. Due to an oversight, we did not include income in the demographics section.

Results

Analysis Strategy

Four variables (average gift, largest gift, planned donation amount, number of visits) were highly right-skewed and leptokurtic. We log-transformed them, thus meeting assumptions for linear regression (skew/kurtosis < 1.5). We display means, medians, and standard deviations of all variables in **Table 4**, and correlations in **Table 5**. As in Study 1, connectedness and identification with the university community evidenced multicollinearity [reminder: $r(159) = 0.78$], so we averaged the six items across the connectedness and identification measures into a composite reflecting university belongingness. The Cronbach's alpha for university belongingness was 0.92.

We first conducted hierarchical regression analyses to identify the relation between university nostalgia and participants' intentions to engage with their alma mater. We did not control for graduation year in these models, as we recruited participants from the same class cohort. Given that current engagement and positive thoughts and feelings could be explained by having had a positive experience at university, we controlled for positive past university experience in all models, and past engagement in all models except volunteer plans[2] in step 1 of each regression model. In step 2 of each model, we entered university nostalgia. We present results of these analyses in **Table 6**.

[2]Due to an error in the Study 2 survey construction, we asked participants only about future volunteerism plans and not about past volunteerism frequency.

TABLE 4 | Means, standard deviation, and median of study 2 variables.

Variable	Mean	SD	Median
University Nostalgia	4.14	1.12	4.29
Connectedness to university community	4.36	1.50	4.57
Identification with university community	5.22	1.43	5.67
Belongingness with the university community	4.94	1.46	5.17
Self-continuity	4.80	1.35	4.75
Felt meaning in life	4.43	1.46	4.50
Positive university experiences	5.17	1.12	5.50
Well-being	5.07	0.92	5.29
Past socializing with alumni	3.87	1.55	4.00
Planned future socializing with alumni	4.09	1.65	4.00
Planned volunteering (hours)	3.17	1.93	3.00
Past university visits (number of visits)	29.51	140.30	5.00
Class reunions attended (number of reunions)	2.60	1.78	3.00
Interest in attending upcoming reunion	4.55	1.69	5.00
Years donated (number of years)	16.63	8.93	20.00
Average gift amount (dollars)	$809	$2,445	$100
Largest gift amount (dollars)	$6,007	$23,642	$500
Planned future donation amount (dollars)	$2,318	$9,576	$125

Median income = $100,000. All variables without a specified rate are measured on a 1 (low) to 7 (high) rating scale.

We then examined three potential mediators to explain the links of university nostalgia with subjective well-being and engagement outcomes above and beyond the covariates: belonging with the university community, self-continuity, and meaning in life. To test these mediators, we used Hayes's (2018) PROCESS macro v3.4 in SPSS with 5,000 bootstrapped iterations. For each outcome, we report both simple and parallel mediation analyses, as in Study 1 (PROCESS model 4). We controlled for positivity of university experiences and, when applicable, past engagement. We included positive college experiences and prior engagement in the model of the dependent variable, but not in the model of the mediator as in Study 1.

Subjective Well-Being

A hierarchical regression modeled the relation between university nostalgia and current subjective well-being, controlling for positivity of university experiences (**Table 6**). University nostalgia did not significantly predict subjective well-being ($\beta = -0.04$, $p = 0.694$, $R^2\Delta = 0.001$).

Although the total "effect" of university nostalgia on subjective well-being was not significant, we probed whether there were significant indirect effects of university nostalgia on subjective well-being through the three mediators[3]. When assessing each mediator separately, the relation between university nostalgia and subjective well-being was significantly mediated by university belonging [$ab = 0.24$, 95% CI (0.13,0.36)], but not self-continuity [$ab = 0.06$, 95% CI (−0.002,0.14)] or meaning in life [$ab = 0.10$, 95% CI (−0.03,0.22)]. In the parallel mediation analysis, university belonging uniquely

[3]See Hayes (2018) for a succinct explanation for why the absence of a significant total X-Y relation does not necessarily preclude a logically sound indirect X-Y effect through one or more mediators.

TABLE 5 | Bivariate correlations among study 2 variables (N = 161).

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
1. Univ. Nostalgia	–																		
2. Connection	0.65***	–																	
3. Identification	0.59***	0.78***	–																
4. Belonging	0.69***	0.94***	0.87***	–															
5. Meaning in life	0.62***	0.57***	0.69***	0.68***	–														
6. Self-continuity	0.47***	0.61***	0.62***	0.66***	0.57***	–													
7. Positive univ. experiences	0.41***	0.44***	0.50***	0.52***	0.40***	0.30***	–												
8. Well-being	0.02	0.23**	0.16*	0.22**	0.12	0.13	0.07	–											
9. Past socialization	0.43***	0.59***	0.29***	0.49***	0.28***	0.39***	0.25**	0.21**	–										
10. Planned socialization	0.49***	0.68***	0.42***	0.62***	0.39***	0.45***	0.32***	0.25**	0.90***	–									
11. Willingness to volunteer	0.55***	0.66***	0.51***	0.65***	0.48***	0.46***	0.26***	0.22**	0.42***	0.49***	–								
12. Past reunion attend.	0.38***	0.48***	0.36***	0.46***	0.26**	0.25**	0.32***	0.11	0.37***	0.36***	0.47***	–							
13. Planned reunion attend.	0.54***	0.64***	0.45***	0.62***	0.43***	0.42***	0.49***	0.18*	0.43***	0.49***	0.54***	0.59***	–						
14. Informal campus visits	0.13	0.22**	0.12	0.20*	0.15	0.09	−0.10	0.06	0.13	0.14	0.15	0.10	0.06	–					
15. Past years donated	0.36***	0.55***	0.45***	0.57***	0.36***	0.24**	0.43***	0.22**	0.19*	0.27***	0.41***	0.52***	0.45***	0.19*	–				
16. Past average gift amount†	0.19*	0.25**	0.10	0.21*	0.22**	0.16	−0.11	0.20*	0.10	0.11	0.29***	0.13	0.07	0.20*	0.20*	–			
17. Past largest gift amount†	0.19*	0.20*	0.17*	0.20*	0.20*	0.15	0.01	0.13	0.13	0.14	0.23**	0.20*	0.14	0.05	0.17*	0.82***	–		
18. Future willing to donate	0.40***	0.52***	0.42***	0.53***	0.43***	0.28***	0.34***	0.18*	0.18*	0.31***	0.39***	0.41***	0.48***	0.16*	0.67***	0.14	0.11	–	
19. Future willing donation amount†	0.19*	0.19*	0.13	0.18*	0.21**	0.13	−0.05	0.14	0.12	0.14	0.22**	0.17*	0.12	0.08	0.16*	0.80***	0.90***	0.09	–

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, and † variable log-transformed due to strong positive skewness.*
Univ, university; Attend., attendance.

TABLE 6 | Regression models for study 2 well-being and alumni engagement outcomes.

Dependent variable (continuous)	Predictor	Step 1						Step 2					
		β	*p*(β)	*F*	*df*	*p*(*F*)	R^2_{adj}	β	*p*(β)	*F*	*df*	*p*(*F*)	R^2_{adj}
Subjective well-being	Positive college experiences	0.08	0.351	0.88	1, 157	0.348	0.01	0.09	0.313	0.52	2, 156	0.597	0.01
	University Nostalgia							−0.04	0.690				
Socializing with other alumni	Positive college experiences	0.11	0.004	333.27	2, 155	<0.001	0.81	0.07	0.055	230.70	3, 154	<0.001	0.82
	Past socialization	0.87	<0.001					0.84	<0.001				
	University Nostalgia							0.10	0.019				
Volunteering (overall amount)	Positive college experiences	0.26	0.001	11.76	1, 157	0.001	0.06	0.05	0.534	34.00	2, 156	<0.001	0.30
	University Nostalgia							0.53	<0.001				
Reunion interest	Positive college experiences	0.34	<0.001	63.44	2, 155	<0.001	0.44	0.24	<0.001	54.80	3, 154	<0.001	0.51
	Past reunion attendance	0.48	<0.001					0.40	<0.001				
	University Nostalgia							0.30	<0.001				
Informal visits	Positive college experiences	−0.05	0.542	3.69	2, 146	0.03	0.04	−0.12	0.172	4.59	3, 145	0.004	0.09
	Past reunion attendance	0.23	0.008					0.17	0.061				
	University Nostalgia							0.23	0.014				
Donation (amount)	Positive college experiences	0.12	0.025	147.52	2, 120	<0.001	0.70	0.08	0.150	102.28	3, 122	<0.001	0.71
	Past donation average amount	0.81	<0.001					0.77	<0.001				
	University Nostalgia							0.12	0.045				
		OR	*p*(*OR*)	Model χ^2	*Df*	*p*(χ^2)	*Nagelkerke* R^2	*OR*	*p*(*OR*)	Model χ^2	*df*	*p*(χ^2)	*Nagelkerke* R^2
Donation (y/n)	Positive college experiences	1.49	0.273	82.15	2	<0.001	0.72	1.06	0.888	88.26	3	<0.001	0.76
	Past donation frequency	1.51	<0.001					1.50	<0.001				
	University Nostalgia							1.16	0.032				

mediated the relation between nostalgia and subjective well-being [*ab* = 0.25, 95% CI (0.10,0.40)]. However, self-continuity [*ab* = −0.01, 95% CI (−0.12,0.08)] and meaning in life [*ab* = 0.02, 95% CI (−0.12,0.15)] did not. Taken together, university nostalgia predicted increased subjective well-being *via* university belonging.

Socializing With Other Alumni

University nostalgia predicted significantly greater interest in socializing with other alumni (β = 0.10, $p = 0.009$, $R^2\Delta = 0.01$). When assessing each potential mediator separately, the relation between university nostalgia and interest in socializing with other alumni was significantly mediated by university belonging [*ab* = 0.17, 95% CI (0.09,0.26)] and meaning in life [*ab* = 0.07, 95% CI (01,0.15)]. However, self-continuity was not a significant mediator [*ab* = 0.03, 95% CI (−0.02,0.08)]. In the parallel mediation analysis, university belonging remained the only significant mediator [*ab* = 0.35, 95% CI (0.21,0.52)]. Self-continuity [*ab* = 0.02, 95% CI (−0.06,0.09)] and meaning in life [*ab* = 0.01, 95% CI (−0.09,0.12)] were not significant mediators.

Volunteering

University nostalgia predicted increased planned volunteering (β = 0.53, $p < 0.001$, $R^2\Delta = 0.24$). In separate mediation analyses, this relation was significantly mediated by university belonging [*ab* = 0.38, 95% CI (0.27,0.51)], self-continuity [*ab* = 0.12, 95%CI (0.05,0.20)], and meaning in life [*ab* = 0.15, 95% CI (0.04,0.25)]. In the parallel mediation analysis, university belonging remained the only significant mediator (*ab* = 0.31, 95% CI [0.20,0.45]). Self-continuity [*ab* = 0.01, 95% CI (= −0.07,0.07)] and meaning in life [*ab* = 0.01, 95% CI (−0.08,0.10)] were not significant mediators.

Reunion Interest

University nostalgia predicted greater interest in attending the next reunion (β = 0.30, $p < 0.001$, $R^2\Delta = 0.07$). In separate mediation analyses, the relation between university nostalgia and participants' interest in attending the upcoming reunion was significantly mediated by university belonging [*ab* = 0.17, 95% CI (0.04,0.31)] and self-continuity [*ab* = 0.06, 95% CI (0.002,0.15)], but not by meaning in life [*ab* = 0.06, 95% CI (−0.03,0.16)]. In the parallel mediation analysis, none of the three indirect effects were significant [university belonging, *ab* = 0.15, 95% CI (−0.02,0.32); self-continuity, *ab* = 0.03, 95% CI (= −0.04,0.11); meaning in life, *ab* = −0.01, 95% CI (−0.10,0.09)].

Informal Visits to Campus

University nostalgia significantly predicted greater number of visits to campus outside of official reunions (β = 0.23, $p = 0.014$, $R^2\Delta = 0.05$). When assessing mediators separately, this relation was significantly mediated by university belonging [*ab* = 0.26, 95% CI (0.01,0.45)]. Self-continuity [*ab* = 0.03, 95% CI (−0.06,0.12)], and meaning in life [*ab* = 0.10, 95% CI (−0.06,0.23)] did not significantly mediate the relation. In the parallel mediation analysis, none of the indirect effects were significant [university belonging, *ab* = 0.30, 95% CI (−0.01,0.55); self-continuity, *ab* = −0.06, 95% CI (= −0.16,0.04); meaning in life *ab* = 0.03, 95% CI (−0.13,0.17)].

Charitable Donations

We first conducted a logistic hierarchical regression to model the likelihood that participants planned to donate (vs. not donate) to their alma mater as a function of their level of university nostalgia. University nostalgia predicted greater odds of a planned donation (OR = 1.16, $p = 0.032$, $R^2\Delta = 0.04$). We then conducted a hierarchical OLS regression analysis to assess whether university nostalgia predicted the amount that participants were willing to donate. We log-transformed the variable for planned donation amount in order to address strong positive skewness in the original variable. University nostalgia predicted higher planned donation amounts (β = 0.12, $p = 0.032$, $R^2\Delta = 0.01$).

We first assessed charitable donations as a dichotomous outcome in a series of simple logistic mediation analyses. The relation between university nostalgia and participants' likelihood of intending to donate (vs. not donate) to the alma mater, calculated as an odds ratio, was significantly mediated by university belonging [*ab* = 1.81, 95% CI (0.44, 4.09)]. Self-continuity [*ab* = 1.15, 95% CI (0.76, 5.29)] and meaning in life [*ab* = 1.74, 95% CI (0.86, 5.74)] did not significantly mediate the relation. In the parallel mediation analysis, none of the indirect effects were significant [university belonging, *ab* = 1.68, 95% CI (0.77, 16.39); self-continuity, *ab* = 0.88, 95% CI (= 0.26, 1.93); meaning in life, *ab* = 1.67, 95% CI (0.67, 27.24)].

We next assessed charitable donations as the total amount that participants reported planning to donate to the alma mater (log-transformed). When assessing mediators separately, the relation between university nostalgia and planned donation amount was significantly mediated by university belonging [*ab* = 0.10, 95% CI (0.002,0.21)]. Self-continuity [*ab* = 0.03, 95% CI (−0.02,0.09)] and meaning in life [*ab* = 0.08, 95% CI (−0.001,0.17)] did not significantly mediate the relation. In the parallel mediation analysis, none of indirect effects were significant [university belonging, *ab* = 0.06, 95% CI (−0.06,0.19); self-continuity, *ab* = 0.001, 95% CI (= −0.08,0.06); meaning in life, *ab* = 0.06, 95% CI (−0.04,0.16)].

Moderation by Positivity of University Experience

Finally, we examined whether positivity of past university experiences moderated the links of university nostalgia with subjective well-being and university engagement. Results revealed evidence for a moderating role of past university experiences pertaining to two indices of university engagement: planned donation amounts and intentions to attend an upcoming reunion (for all other outcome variables, University Nostalgia × Past University Experience interaction *p*s > 0.13).

Participants' positive experiences in university significantly moderated the association of nostalgia with planned donation amounts [interaction β = −0.17, $F(1, 124) = 4.90$, $R^2\Delta$ due to interaction = 0.03, $p = 0.029$]. Analysis of the simple slopes (**Figure 1**) indicates that the relation between nostalgia and donation amount was stronger for participants who scored low (−1 *SD*) on positive past university experiences (β = 0.64, $p < 0.001$) than for those who scored high (+1 *SD*) on positive past university experiences (β = 0.26, $p = 0.031$). The relation between university nostalgia and participants' plans to attend the upcoming reunion was also moderated by positivity

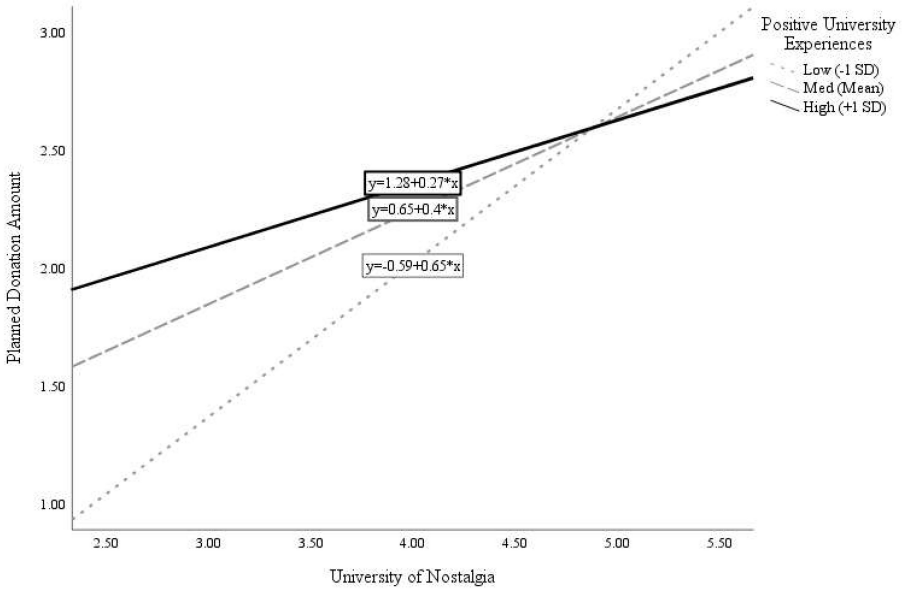

FIGURE 1 | Moderation of relation between University Nostalgia and charitable donations positivity of University experiences.

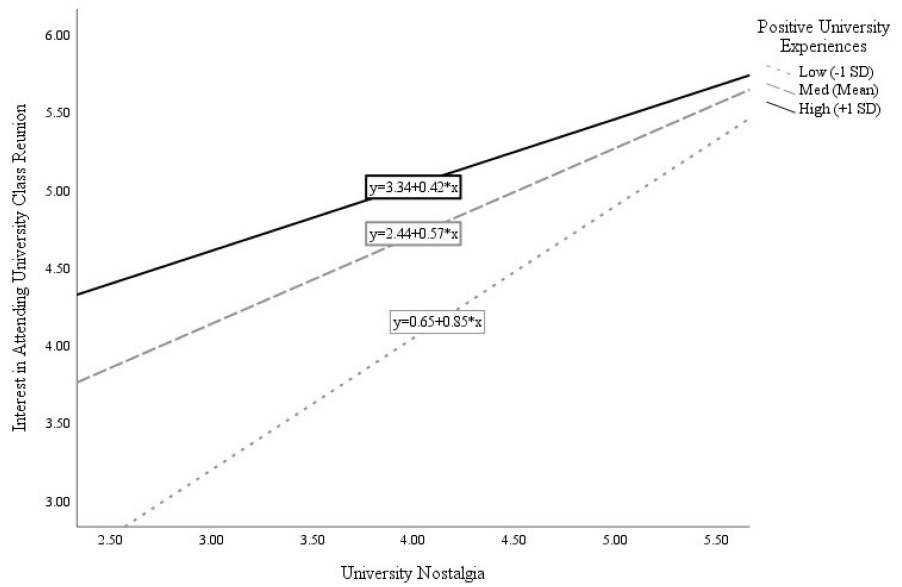

FIGURE 2 | Moderation of relation between University Nostalgia and reunion interest by positive University experiences.

of university experiences (interaction $\beta = -0.19$, $R^2\Delta$ due to interaction = 0.02, $p = 0.024$). As shown in **Figure 2**, the positive relation between university nostalgia and reunion interest was again more pronounced for participants who scored low (-1 *SD*) on positive university experiences ($\beta = 0.85$, $p < 0.001$) than those who scored high ($+1$ *SD*) on positive university experiences ($\beta = 0.42$, $p = 0.001$).

These findings offer tentative support for the idea that, for individuals who had a relatively negative (compared to positive) overall university experience, the few nostalgic memories that they do cherish assuage their overall negative experience, thereby protecting and sustaining some aspects of university engagement.

Discussion

Study 2 replicated and extended the findings of Study 1. Consistent with Hypothesis 1, university nostalgia predicted willingness to engage with the university in several ways: intentions to donate time volunteering and donate money, plans to spend more time socializing with fellow alumni, attend an upcoming class reunion, and visit campus (a new outcome

in Study 2). Stated otherwise, university nostalgia predicted outcomes at both the relational (e.g., time with fellow alumni) and collective (e.g., volunteering for the university) levels. Importantly, and consistent with Study 1, these findings held while controlling for past engagement and positivity of past university experiences (a new control variable in Study 2). University nostalgia was not directly associated with subjective well-being (another new outcome in Study 2), but was linked to it indirectly, *via* increased university belonging.

The mediational findings for Study 2 generally were consistent with those of Study 1. In simple mediation analyses, university belonging was a significant mediator of the relation between university nostalgia and subjective well-being, as well as all six engagement outcomes. Both self-continuity (volunteering and reunion interest) and meaning in life (socializing with other alumni and volunteering) mediated the link between university nostalgia and two engagement outcomes.

In parallel mediation analyses, university belonging uniquely mediated the link between university nostalgia and three outcomes. No other unique indirect effects emerged. The generally weaker results in the parallel mediation analyses are likely due to shared variance among the predictors. Indeed, for three engagement outcomes (i.e., reunion interest, campus visits, planned donation amount), the parallel mediation analysis revealed no significant indirect effects, yet the total, combined indirect effect of all three mediators was significant [reunion interest, $ab = 0.17$, 95% CI (= 0.02,0.32); campus visits, $ab = 0.28$, 95% CI (0.01,0.48); planned donation amount, $ab = 0.12$, 95% CI (= 0.01,0.24)]. Together, these findings provide further qualified support for Hypothesis 2, in particular as it relates to the mediating role of university belonging.

Positivity of experience moderated the relation of university nostalgia with two engagement outcomes in a manner that helps answer the question of who benefits from feeling nostalgic. Whereas it may seem plausible that nostalgia would mostly benefit individuals who have a large reservoir of positive past experiences to look back on, our findings suggest otherwise. University nostalgia was more positively associated with planned donation amounts and reunion attendance intentions among participants who reported more negative overall university experiences. That is, those who had the least positive university experiences benefited the most from university nostalgia. We hasten to add that, although donating and attending reunions arguably are the two most salient examples of university engagement, the effect did not extend to all outcome variables. Regardless, future research would need to test the replicability of our novel finding and also examine more closely this link. Perhaps the negative university experiences lose their potency when examined through the rose-colored glasses of nostalgia, or greater university nostalgia directly changes expectations about future university engagement.

GENERAL DISCUSSION

In his *Requiem for a Nun*, (Faulkner, 1951, p.73) wrote: "The past isn't dead. It isn't even past." Many university alumni never really leave their alma mater. They take it with them, having incorporated in themselves close relationships, university values, and cherished memories. Rather than being a closed chapter in their lives, they reflect on those formative years, and this university nostalgia continues to influence them. In two studies, participants' university nostalgia was associated with intentions to engage with their alma mater and socialize with fellow alumni. Study 1 involved graduates (aged 18–79 years) from a large public university in the southern United States, and Study 2 involved graduates of a private northeast university from two consecutive classes in their 40s. In both studies, university nostalgia was positively associated with greater willingness to donate money to the alma mater and in higher amounts, volunteer for the alma mater, socialize with fellow alumni/ae, and plan to attend upcoming university reunions. University nostalgia predict engagement above and beyond past engagement (both studies) and when controlling for the positivity of past university experiences (Study 2).

Mediation by University Belonging

The relation between university nostalgia and university engagement outcomes was mediated by university belonging: connectedness to, and identification with, the university community. In Study 1, university belonging mediated all but one of the links (decision to donate) in single mediation analyses. When examined in parallel with the other mediator of self-continuity, university belonging uniquely mediated the links between university nostalgia and socializing with fellow alumni as well as the intent to volunteer. The mediation results for Study 2 were even clearer. In simple mediation analyses, university belonging mediated the links of university nostalgia with subjective well-being and all six engagement variables. In parallel mediation analyses (with self-continuity and meaning in life), university belonging continued to mediate the associations of university nostalgia with subjective well-being and socializing.

The mediational analyses provided strong evidence for the role of university belonging. This composite measure was an amalgam of university connectedness and university identification due to their high correlation. The belongingness measure has been used and validated in prior nostalgia research (Wildschut et al., 2006; Hepper et al., 2012a), and the identification measure was adapted from previous work (Tarrant et al., 2004). However, we chose a subset (three items) from each scale. It is possible that our shorter scales resulted in higher correlations. It is also possible that belonging and identification simply are more highly correlated for university nostalgia; future research should address this issue. Future work also should assess the mediational potency of meaning in life and self-continuity with different measures and samples. Further, mediational analyses do not speak to causality, but experiments (e.g., manipulating university belonging) and longitudinal studies may provide additional support for our findings.

Moreover, longitudinal studies should go beyond measuring behavioral intentions and assess university-directed behavior, such as hours volunteered, actual reunion attendance, or money donated. Due to the self-report nature of this work and the potential social desirability demands of requests to donate or

volunteer, participants' self-reported intentions are likely to overestimate their actual readiness to sacrifice money or time for the alma mater (Ajzen et al., 2004). However, given converging evidence that nostalgia does motivate actual giving and helping behavior (e.g., Zhou et al., 2008; Juhl et al., 2020a,b), we expect that the trajectory of our findings would likely be replicated in future studies of *in vivo* behavior.

Taken together, these mediation findings suggest that the sense of belonging to one's university is a key mechanism through which university nostalgia influences activities directed toward one's alma mater as well as fellow alumni. Although these findings are correlational, past experimental research supports a causal path from nostalgia to social connectedness and identification (Wildschut et al., 2014), and from social connectedness and identification to tangible actions to benefit the group (Tyler and Blader, 2003). Notwithstanding, some of these associations may be bidirectional. Repeated university engagement, such as spending time with fellow university alumni or attending reunions, may in turn heighten university nostalgia. Attending a reunion or spending time with university friends may increase the frequency of nostalgic reverie as well as augment social connectedness and identification with the university. These regular injections of university nostalgia *via* university engagement cascade into a feedback loop in which university nostalgia and engagement increase over time. Future work, particularly experimental or longitudinal, may clarify this issue.

Moderation by Positivity of Past Experience

Research has explored the boundary conditions of nostalgia's benefits from several angles. An individual difference approach has found that nostalgia's benefits typically extend widely. For example, a recent well-powered meta-analysis revealed that neuroticism does not moderate the benefits of induced nostalgia (Frankenbach et al., 2020). We addressed this issue by asking whether people who report a negative past university experience can derive benefits from university nostalgia. It may seem plausible that having fewer positive memories to draw upon might prevent an individual from experiencing some of the social or existential benefits of nostalgia. We found the opposite. For two engagement outcomes—planned financial donation amount and upcoming reunion plans—the link with university nostalgia was strongest among those alums who had the most negative university experiences. This surprising finding demands replication, but it may reflect the capacity for collective nostalgia to serve as a psychological resource that enhances willingness to socialize with others and maintain loyalty with ingroups (Sedikides and Wildschut, 2019). Future research should examine more closely the possible role of nostalgia in forgiveness and repairing social bonds. It is possible, for example, that dispositional nostalgia for a group, such as one's university, promotes forgiveness of perceived offenses through greater willingness to empathize (Juhl et al., 2020b) or engage in recollection that might be painful (Batcho, 2013) of past offenses by individuals within the university. This finding resonates with the idea, voiced so elegantly by Dostoyevsky (2007) in *The Brothers Karamazov*, that ". . . if one has only one good memory left in one's heart, even that may sometime be the means of saving us" (p. 868).

Additional Limitations and Future Directions

In addition to the aforementioned limitations (e.g., the university belonging mediator, measuring behavioral intentions), our samples had some potential weaknesses. Although the two samples were reasonably diverse on characteristics such as age as well as university region and type (i.e., one smaller private school in the northeast and one large public school in the south), both were United States universities. Future research could examine how both university culture and the larger culture might moderate these findings. Relatedly, cross cultural work could attempt to examine the characteristics of college that afford the greatest wellsprings of nostalgic reverie. We suspect elements that foster social connection (e.g., dormitory or apartment life and college clubs) and social identity (e.g., college sports) are the most promising.

Coda

Nostalgia for one's university days motivates graduates to stay connected to their university community by volunteering and donating money, as well as stay connected to their fellow graduates by socializing with them. Feelings of university belonging explain most of these links. These findings are captured by the alma mater of the United States college from which we recruited in Study 2:

> *Though 'round the girdled earth they roam, her spell on them remains. . .*
> *Around the world they keep for her their old undying faith.*

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Virginia Commonwealth University Institutional Review Board. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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Making America Great Again? National Nostalgia's Effect on Outgroup Perceptions

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Nostalgia is a fond longing for the past that has been shown to increase feelings of meaning, social connectedness, and self-continuity. Although nostalgia for personal memories provides intra- and interpersonal benefits, there may be negative consequences of group-based nostalgia on the perception and acceptance of others. The presented research examined national nostalgia (a form of collective nostalgia), and its effects on group identification and political attitudes in the United States. In a sample of US voters ($N = 252$), tendencies to feel personal and national nostalgia are associated with markedly different emotional and attitudinal profiles. Higher levels of national nostalgia predicted both positive attitudes toward President Trump and racial prejudice, though there was no evidence of such relationships with personal nostalgia. National nostalgia most strongly predicted positive attitudes toward president Trump among those high in racial prejudice. Furthermore, nostalgia's positive relationship with racial prejudice was partially mediated by perceived outgroup threat. Results from this study will help us better understand how the experience of national nostalgia can influence attitudes and motivate political behavior.

Keywords: national nostalgia, prejudice, intergroup relations, emotion, political differences

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Throughout Donald Trump's tumultuous presidential campaign and tenure, journalists and scholars sought to explain his appeal to many American voters. In the 2016 presidential election, as many as nine million voters who previously supported Barack Obama, the first Black president, voted for Trump despite his inflammatory race-focused rhetoric (Skelley, 2017). One concept repeatedly emerged within these discussions as a mainstay of Trump's political appeal: that of *nostalgia*, broadly defined as a bittersweet longing for the past. Evidence of Trump's appeals to an earlier time in American history have been cited from the beginning of the 2016 presidential campaign through his failed 2020 reelection campaign, ranging from the salient nostalgic reverie of the "Make America Great Again" campaign slogan (Samuelson, 2016) to more coded political rhetoric promising White, working class Americans a return to times that have been lost (Brownstein, 2016).

Some have hypothesized that such nostalgic rhetoric may capitalize on voters' latent feelings of threat to their economic welfare, or to the racial or cultural homogeneity of American culture (Brownstein, 2016; Smeekes et al., 2020). On a broad scale, nostalgia focused on nationality is a prominent feature of right-wing populist party rhetoric, and evidence from voters in the Netherlands suggests that the emphasis of stigmatizing outgroups and preserving cultural hegemony within nostalgic messaging is what explains the link between nostalgia and right-wing

populist support (Smeekes et al., 2020). In the United States, several studies provide strong evidence of a link between support for Trump and group prejudice. For example, survey research has indicated that racial and anti-immigrant resentment strongly predicted voters' support of Trump in 2016, more so even than voter's feelings of economic threat (Hooghe and Dassonneville, 2018; Mutz, 2018; Schaffner et al., 2018). Additionally, a longitudinal analysis of police reports evidenced a significant increase in hate crimes reported in Trump-supporting counties in the 6 months following the 2016 presidential election (Edwards and Rushin, 2018). However, no research has of yet established whether Trump's nostalgic rhetoric may be associated with voters' attitudes toward racial outgroups. To this end, in this paper, we present evidence that national nostalgia, an emotion distinct from personal nostalgia, is associated with increased prejudice as well as support for the populist messaging of Donald Trump.

The Sociality of Nostalgia

Nostalgia is a mostly positive emotion that increases self-regard, attenuates self-esteem defense, enhances meaning in life, increases perceptions of self-continuity, and lessens feelings of existential threat (Wildschut et al., 2006; Routledge et al., 2008). Most people report experiencing nostalgia on a regular basis (Wildschut et al., 2006) and often structure their present in anticipation of experiencing nostalgia in the future (Cheung et al., 2020). Nostalgia is triggered in various ways, including by music, scents, and reflecting on past momentous events (Barrett et al., 2010; Reid et al., 2015; Sedikides et al., 2015b). This emotion also serves vital relational functions, increasing social connectedness and perceived social support (Sedikides et al., 2008).

The social connectedness function of nostalgia is a primary avenue through which nostalgia confers positive psychological benefits. Although nostalgic memories are more likely to be evoked while experiencing negative affect (Wildschut et al., 2006) and loneliness (Zhou et al., 2008), the content of nostalgic memories evoked during these emotional states seem to act as a "repository" of positive affect, positive self-regard, and social connectedness (Sedikides et al., 2008, p. 306). The content of nostalgic memories is predominantly social, including recollections of close others, important social events, or tangible objects reminiscent of loved ones (Wildschut et al., 2006; Batcho et al., 2008). As a result of this, nostalgic memories seem to indirectly regulate these positive emotions by evoking and making more salient one's symbolic connections with others (Sedikides and Wildschut, 2019). For example, nostalgia felt in response to loneliness has been shown to reduce perceptions of isolation and low social support (Zhou et al., 2008). In organizational contexts, nostalgic emotions buffer the negative effects of low social support (due to procedural injustice) on reduced cooperation (van Dijke et al., 2015).

Importantly, those who are more likely to experience nostalgia (i.e., those high in personal nostalgia) are also more motivated to control prejudicial feelings and reduce their expression of prejudices against outgroups as a result of these positive benefits (Cheung et al., 2017). Four studies of Caucasian Americans examined the links between personal nostalgia and the expression of both blatant and more subtle prejudice toward African Americans (Cheung et al., 2017). They found that the link between personal nostalgia and prejudice reduction was mediated by feelings of empathy, suggesting that the experience of nostalgia offers advantages beyond the self.

National Nostalgia vs. Personal Nostalgia

The link between nostalgia and sociality becomes more complex when considering nostalgia felt for one's group. Although nostalgia felt at the individual level confers both intra- and interpersonal benefits, group-based nostalgia appears to have a distinct psychological profile from personal nostalgia. Group-based emotions, as distinct from individual-level emotions, arise when individuals self-categorize with a social group and integrate the group into their sense of self (Seger et al., 2009). Furthermore, group-based emotions can differ markedly from their analogous individual level counterparts, such as when an individual might feel strong pride and happiness for their home team while not feeling strong pride in themselves (Smith and Mackie, 2016). Furthermore, group-based emotions serve a regulatory function of strengthening positive attitudes and behavioral intentions toward both their ingroup and threatening outgroups (Smith et al., 2007; Seate and Mastro, 2015).

Group-based nostalgia—operationalized as nostalgia felt for events shared with one's ingroup, or *collective nostalgia*—can be experienced in a variety of social settings, including organizations, school classes (e.g., Class of 2021), cities, and nations (Wildschut et al., 2014; Smeekes, 2015; Green et al., 2021). Like individual-level nostalgia, shared memories can include notable events, such as a special performance (band or orchestra), graduation day, homecoming (college class), or sports championships (city). However, unlike individual-level nostalgia, group-based nostalgia can occur in the form of a longing for a past that individuals themselves did not experience, but rather one that was passed down through collective memory (Martinovic et al., 2017). Additionally, collective nostalgia has been shown to increase positive attitudes as well as an approach-oriented action tendency toward the ingroup relative to an individually experienced nostalgic memory (Wildschut et al., 2014, Study 1). Collective nostalgia also can increase group-oriented prosociality (e.g., willingness to volunteer or donate money to help the ingroup; Wildschut et al., 2014; Green et al., 2021). Collective self-esteem mediated this effect: recalling a collective nostalgic event increased collective self-esteem, which, in turn, increased intentions to volunteer. Other research has found additional ingroup benefits to collective nostalgia, such a preference for domestic (vs. foreign) consumer products (Dimitriadou et al., 2019) and a promotion of collective political action (in Hong Kong; Cheung et al., 2017).

However, there are two sides to this coin. A preference for domestic products is also a bias against foreign products, and the promotion of collective political action was driven by anger and contempt for the outgroup (i.e., Hong Kong residents toward mainland Chinese; Cheung et al., 2017). Individuals who recalled a collective nostalgic memory (vs. an ordinary collective memory) were more willing to punish outgroup members who were unfair to an ingroup member (Wildschut et al., 2014, Study

3). However, in some cases, collective nostalgia might increase intergroup contact when individuals can feel collective nostalgia for a *superordinate* group (Martinovic et al., 2017). In a study of former Yugoslavians who had settled in Australia, Bosniaks, Croats, and Serbs who identified with Yugoslavia (when these groups were bound together prior to division and subsequent conflict) reported feeling more nostalgic for Yugoslavia and reported more contact with the ethnic groups that had resided in the former Yugoslavia (but not control ethnic groups).

National nostalgia is one type of collective nostalgia that is felt while self-categorizing as a citizen of a specific country, and is likely to be associated with particular intra- and intergroup attitudes and behavioral intentions. Just as personal nostalgia during times of change and upheaval can facilitate coping (e.g., attenuating loneliness) (Zhou et al., 2008), national nostalgia—a reverie for a country's good old days—may increase felt closeness to fellow natives during times of national stress or uncertainty. However, nostalgic revelry at the national level may exclude other citizens, such as recent immigrants or minorities (Smeekes and Jetten, 2019). Studies of national nostalgia among Dutch participants indicated that national nostalgia predicted prejudice toward religious minorities in the country (Smeekes et al., 2014) as well as prejudice toward Muslim countries (Smeekes, 2015). Notably, these outgroup attitudes were not predicted by personal nostalgia, which has been shown to be associated with decreased intergroup prejudice (Cheung et al., 2017). This distinction between personal and national nostalgia may lie in the extent to which outgroups pose an emotional threat to the self.

National Nostalgia and Outgroup Threat

The intergroup threat theory (Stephan et al., 1999) posits that intergroup prejudice and hostility is largely explained by perceptions of threats to one's ingroup by an outgroup. In line with this theory, substantial evidence has found that intergroup prejudice is strongly influenced by both realistic and symbolic threat perception (Stephan et al., 2002; Mutz, 2018). Realistic threats are perceived threats to one's actual well-being, and typically include the domains of physical safety, political power, and economic security. Symbolic threats are more abstract, dealing with the cultural norms, ideologies, values, and traditions of one's ingroup (Stephan and Stephan, 2000). Realistic threats tend to be elicited from groups that are more economically powerful, whereas symbolic threats come about from marginalized outgroups who are perceived as highly dissimilar, and thus often inferior, to an ingroup (Stephan et al., 1999). Though these constructs are distinct and examined separately in the literature, there often is overlap between them, especially considering the demographic, economic, and social dynamics of some ingroups and outgroups. To be specific, when a marginalized minority grows in political, economic, or representative power, realistic and symbolic threats can be conflated (Craig and Richeson, 2014).

One salient factor in perceived threat for members of majority groups is the size of minority outgroups, with more threat being evoked by larger outgroups (Giles, 1977; Craig and Richeson, 2018) or even through messages endorsing diversity (Dover et al., 2016). In one notable set of studies by Craig and Richeson (2014), White American participants who read that the US population was becoming more diverse (relative to control conditions)—that the percentage of whites was dropping—reported more explicit (studies 1 and 3) and implicit (studies 2a and 2b) prejudice toward non-White outgroups and pro-White attitudinal bias. One possible explanation on why national and personal nostalgia are associated with different intergroup attitudes may be due to different levels of social categorization evoked, leading to differing levels of perceived threat. Personal nostalgia, which is associated with continuity of personal identity (Sedikides et al., 2015a) and evokes strong feelings of social connectedness, also has downstream implications for reducing anxiety and hostility toward outgroup members (for a review, see Sedikides and Wildschut, 2019). In contrast, feeling national nostalgia is associated with self-categorizing at the group level, evoking one's national identity (Smeekes and Verkuyten, 2015). Similar to how personal nostalgia may be evoked when feeling disconnection at the individual level, national nostalgia has been shown to be evoked in response to existential concerns about one's group-based identity, and may have the beneficial effect of reducing anxiety by bolstering perceptions of group continuity and connection (Smeekes et al., 2018). For example, trait national nostalgia among Dutch participants was positively associated with wanting to protect national ingroup identity (Smeekes, 2015). Similarly, a cross-national survey across 27 countries found that existential concerns about the future of one's country predicted increased collective nostalgia, which in turn predicted greater ingroup belonging and anti-immigrant sentiment (Smeekes et al., 2018). However, when the presence or power of outgroups is salient (e.g., chronically or by the rhetoric of politicians), national nostalgia may increase perceived threat. Moreover, ingroup continuity may be threatened by consideration of outgroups (Smeekes et al., 2018). This may be particularly true for people whose views of the national past are distorted—for example, when whites in the United States feel a longing for a (whiter and more homogenized) past that never was. Thus, national nostalgia could increase this fear of the future, leading to increased prejudice.

With the exception of a subsample of United States participants included in the cross-national study of Smeekes et al. (2018), this distinction has not been examined in the United States. Additionally, no studies have directly examined this theorized relationship in the context of political beliefs. Given that the tumultuous Trump years emphasized a number of political issues associated with national and ethnic identities, we extended this line of inquiry by examining whether perceived intergroup threat explains any found relationship between national nostalgia and endorsement of symbolic prejudice.

National Nostalgia and Outgroup Perceptions in the Context of Political Messaging

Recent work has highlighted the prominence of national nostalgia in the rhetoric of right-wing populist political parties, and in particular its role in posing racial or national outgroups as scapegoats for perceived economic or cultural decline (Mols

and Jetten, 2014; Smeekes et al., 2020). Political leaders often utilize national nostalgia in rhetorical strategy by emphasizing the discontinuity between a nation's past and present (Mols and Jetten, 2014), which then serves to evoke collective angst about group status (Smeekes et al., 2018). A content analysis of speeches by right-wing populist leaders in Western Europe found consistent themes of nostalgia for their country's "glorious past" while denigrating the country's present, as well as themes emphasizing that a) opponents of the party were the cause of this discontinuity between past and present, and b) increasing the country's strength and opposition to party opponents would return the nation to its former glory (Mols and Jetten, 2014). By emphasizing collective identity discontinuity, and then highlighting a potential scapegoat to blame for that discontinuity, populist leaders offer listeners an outlet for restoring psychological well-being by denigrating the outgroups believed to be responsible (Smeekes et al., 2018). Indeed, national nostalgia has been shown to explain support for right-wing populist policies and leaders via the denigration of immigrant and racial outgroups (Smeekes et al., 2020).

Similarly, the role of intergroup relations was a strong focus of Donald Trump's 2016 and 2020 presidential campaign rhetoric[1]. In the 2016 campaign, Trump borrowed Ronald Reagan's 1980 slogan, "Make America Great Again," and emphasized claims that the United States had deteriorated from its former status. Along with these statements, he made numerous controversial statements on race, implying that changing demographics were, in part, to blame for this decline (Pettigrew, 2017). This led political pundits to claim that Trump's supporters were primarily White Americans who felt threatened by changing racial demographics and nostalgic for a past, whiter version of the United States. Exit polls from the 2016 presidential election appeared to support some of these claims, as White voters were the only racial demographic to support Donald Trump over Hillary Clinton, doing so by a large margin of 20 percentage points (CNN, 2016)[2]. Furthermore, several academic studies conducted in the wake of the 2016 election further supported the notion that intergroup attitudes played an important role in voters' choice to support Trump. Surveys conducted with representative panels found that support for Trump was most strongly predicted by negative attitudes toward the increased proportion of non-White US citizens in the population and anti-globalization attitudes (Hooghe and Dassonneville, 2018; Major et al., 2018; Mutz, 2018).

To build upon this research, the aim of our study was to directly examine how voters' propensity to feel national nostalgia may explain support for Trump's populist rhetoric as well as increases in racial prejudice in the United States following the 2016 presidential election (Edwards and Rushin, 2018). Furthermore, we hoped to highlight the unique role of perceived realistic and symbolic threats in shaping US voters' political attitudes. We thought it appropriate to examine both realistic and symbolic threats given the unique role of Black Americans in United States history and the ever-evolving racial and ethnic demographics of the United States, of which White Americans are becoming less of a majority (US Census Bureau, 2020).

The Current Study

We examined the role of national nostalgia in propagating intergroup racial hostility above and beyond political orientation. We explored how national nostalgia relates to political and racial attitudes among voters who participated in the 2016 US presidential election. We also examined the interplay between national nostalgia, pro-Trump attitudes, outgroup prejudice, and perceived outgroup threat.

Although previous research examined survey data taken around the time of the 2016 presidential race (Hooghe and Dassonneville, 2018; Mutz, 2018), our data were collected ∼1 year after the election, allowing us to see how our participants felt after President Trump had been in office for some time, and whether the nostalgic message of "Making America Great Again" still resonated with voters. Minimal work on national nostalgia has been conducted, and to date, nearly all of this work has been conducted outside of the United States; thus, this research would explore the potential link between national nostalgia and political attitudes as well as study the phenomenon in the US sociopolitical landscape. In addition, we included a validated measure of personal nostalgia in order to better examine the association between personal and national nostalgia as well as to assess whether each type of nostalgia might be associated with political attitudes.

Hypotheses

We tested one specific hypothesis and three exploratory research questions, which were pre-registered on Open Science Framework (https://osf.io/mwh6n).

Hypothesis 1. National nostalgia would be positively related to pro-Trump attitudes (1a). No relationship was expected to be found between personal nostalgia and positive attitudes toward President Trump (1b).

Research Question 1. Will White or Republican identity be positively related to pro-Trump attitudes?

Research Question 2. Will national nostalgia be positively related to racial prejudice?

Research Question 3. Will the relationship between national nostalgia and racial prejudice be mediated by increased threat sensitivity?

METHOD

Participants

An *a priori* power analysis using G*Power (Faul et al., 2009) indicated a minimum of 132 individuals would be needed to detect a small correlation of $r = 0.09$[3] with 95% power

[1]We note that intergroup relations were also a salient theme in the 2020 election (e.g., the role of the Black Lives Matter movement); however, as our data were collected in 2017, we emphasize the 2016 election in this paper.

[2]Though a majority of all non-White voters supported Hillary Clinton over Donald Trump, the exit polls showed that the greatest differential was among Black voters, who voted in Clinton's favor by a margin of 89 to 8% (CNN, 2016). Thus, we chose to use Black voters as a comparison group to the Caucasian sample.

[3]The Pearson correlation between national nostalgia and outgroup prejudice reported by Smeekes and Verkuyten, 2015, study 2).

and $\alpha = 0.05$. We recruited 252 US citizens who voted in the 2016 presidential election and identified as either White or Black (57.9% female, and 54.4% White). Participant age ranged from 18 to 79 ($M = 36.34$, $SD = 12.68$). Regarding political affiliation, 44.0% of the participants identified as Democrats, 25.4% Independent, 23.4% Republican, and 7.2% as Other. Participants were recruited through Amazon MTurk (www.mturk.com) during the Fall of 2017 and compensated $0.30 for completing the survey.

Regarding our sample demographics, White individuals comprised approximately 74% of the electorate in the 2016 election (Pew Research Center, 2018); however, we purposefully oversampled Black voters for the purposes of achieving appropriate statistical power for our analyses. Additionally, Republicans comprised ∼31% of the electorate, with Democrats and Independents making up 35 and 34%, respectively. Thus, we feel that our sample is an accurate reflection of the 2016 US voters.

Measures

Personal Nostalgia

The Southampton Nostalgia Scale (SNS; Routledge et al., 2008) measured personal nostalgia, operationalized as how frequently participants experience nostalgia and how significant participants felt nostalgic experiences were to them. The scale included seven items (e.g., "How valuable is nostalgia for you?") rated from 1 (*Not at all*) to 7 (*Very much*). To build on past national nostalgia research (Smeekes et al., 2014), we use a validated measure of personal nostalgia (proneness to feeling personal nostalgia).

National Nostalgia

The National Nostalgia Scale (NNS; Smeekes et al., 2014, Study 1) measured participants' propensity to feel nostalgia on the basis of one's national ingroup membership. The scale included four items rated from 1 (*Very rarely*) to 5 (*Very frequently*) scale. The NNS used in this study was modified from the scale of Smeekes and Verkuyten (2015)[4] to reflect American nationality [e.g., "How often do you long for the America (Netherlands) of the past?"].

Positive Attitudes Toward Trump

In terms of political attitudes, we wanted to assess positive sentiment toward the President as related to the experience of nostalgia. Therefore, we used a modified version of the State Functions of Nostalgia Scale (SFN; Hepper et al., 2012), which measures the extent to which nostalgia confers the positive benefits of social connectedness, well-being, self-regard, and overall positive affect. Each item was modified to assess how participants experienced these benefits as they related to Donald Trump's presidency. This scale consisted of 16 items (e.g., "Thinking about the election of Donald Trump makes me feel protected/happy/life is worth living"), that were rated on a 1 (*Not at all*) to 5 (*Extremely*) scale.

[4]The authors would like to note that this scale was not included in the original pre-registration, as it was published just prior to the time this study was developed. However, the decision was made prior to data collection to utilize this validated scale as a more direct and statistically sound way to measure the construct of national nostalgia.

Outgroup Threat Perception

The Realistic Threat Scale (RTS; Stephan et al., 2002) was employed to measure realistic threat perceptions (e.g., of social or economic harm) of Black individuals. The scale was examined only among White participants. The measure includes 12 items (e.g., "African Americans hold too many positions of power and responsibility in this country") rated on a 1 (*Strongly disagree*) to 7 (*Strongly agree)* scale.

Racial Prejudice

The Symbolic Racism Scale (SRS; Henry and Sears, 2002) was used to assess cognitive and affective dimensions of racial prejudice toward Black individuals. The measure consisted of eight items (e.g., "It's really a matter of some people not trying hard enough; if Blacks would only try harder they could be just as well off as Whites.") rated on a 1 (*Strongly disagree*) to 4 (*Strongly agree*) scale.

Political Measures

Participants reported their political orientation on a scale ranging from 1 (Very Liberal) to 7 (Very Conservative). Participants also chose which political party they most strongly identified with (Democrat, Republican, Independent, or Other). Participants then indicated which political candidate they voted for in the 2016 presidential election (Hillary Clinton, Donald Trump, or Other). They then responded to the question "How much do you feel like we need to 'Make America Great Again'?" on a 1 (*Not at all*) to 7 (*Extremely*) scale. Finally, participants reported their country of origin and whether English was their native language.

Ethnic Identity Salience

The Multi-Ethnic Identity Measure—Revised (MEIM-R; Phinney and Ong, 2007) was used to determine the centrality of participants' racial/ethnic backgrounds to their sense of self. The scale contains such as "I have a strong sense of belonging to my ethnic group," and each item was rated on a scale of 1 (*Strongly disagree*) to 5 (*Strongly agree*) scale.

Demographics

Participants last reported their gender, age, and racial identity.

Procedure

Participants signed up through Amazon Mturk to complete an online survey about their attitudes toward the past, race, and politics. After indicating their informed consent, participants responded to all study measures and items in the order described above. All responses were collected over a single, 1 week period in the Fall of 2017 to avoid history artifacts in the data. Additionally, all participants passed attention checks ensuring that they were properly attending to questionnaire items. For the purposes of this survey, missing more than two attention check items indicated insufficient attention and warranted non-inclusion of that participant's data.

RESULTS

Descriptive statistics and zero-order correlations are displayed in **Table 1**. To test our hypotheses, we conducted a series of hierarchical linear regression models and bootstrapped

mediation and moderation analyses to assess the relationship between nostalgia (national and personal) and political and intergroup attitudes using SPSS v. 20 and Hayes' PROCESS macro v.3 (Hayes, 2013). Following these baseline models, we also support our findings using path analyses employing maximum likelihood estimation using IBM AMOS v. 26 (Due to a computer error, the national nostalgia data from 72 participants were unusable, reducing the *n* for analyses including national nostalgia to 193, still above the target based on the power analysis).

Main Hypothesis

We first assessed whether national nostalgia and personal nostalgia would be related to pro-Trump attitudes in the ways previously predicted. National nostalgia and personal nostalgia proneness were entered simultaneously in step 2 of the model to identify their unique relationship with attitudes toward Trump. In step 1 of the hierarchical model, political orientation significantly predicted pro-Trump attitudes such that higher conservatism was associated with more positive attitudes of Trump, $\beta = 0.59$ $t(192) = 10.08$, $p < 0.001$. In step 2 of the model, national nostalgia was associated with more pro-Trump attitudes above and beyond political affiliation, $\beta = 0.30$, $t(192) = 4.43$, $p < 0.001$, supporting Hypothesis 1a. In contrast, personal nostalgia was not associated with pro-Trump attitudes above and beyond political orientation, $\beta = -0.07$, $t(192) = -1.13$, $p = 0.259$. Nostalgia predicted a significant proportion of variance in attitudes above and beyond political orientation, $F_{(2, 189)} = 9.90$, $p < 0.001$, $R^2\Delta = 0.06$.

To examine this relationship in a consolidated path model[5], **Figure 1** displays Path Model 1, quantifying the relationship between national and personal nostalgia and race, political orientation, ethnic identity salience, and pro-Trump attitudes. The model fit the data somewhat weakly due to the lower sample size [$\chi 2(1) = 23.01$, $p < 0.001$; CFI = 0.89; RMSEA = 0.34; SRMR = 0.03]. As shown in Model 1, Hypothesis 1 was again supported: national nostalgia predicted pro-Trump attitudes ($\beta = 0.24$, $p < 0.001$), whereas personal nostalgia was unrelated to pro-Trump attitudes ($\beta = -0.08$, $p = 0.156$).

Research Question 1

To assess whether there was an association between race, political affiliation, and pro-Trump attitudes, we ran a 2 (Racial Identification) × 3 (Political Party Affiliation) ANOVA. Racial identification was coded with 0 = White/European-American, 1 = Black/African-American (shortened to W/EA and B/AA going forward). Political party affiliation was coded as 1 = Republican, 2 = Democrat, and 3 = Independent and were analyzed using an indicator multicategorical contrast. For the purposes of this analysis, data from participants who did not identify with one of these three major political groups were excluded. The model included 59 Republicans (34 W/EA, 25 B/AA), 111 Democrats (48 W/EA, 63 B/AA), and 64 Independents (44 W/EA, 24 B/AA). The factorial model found that political party affiliation was the only significant predictor of holding positive attitudes toward President Trump, $F_{(2, 228)} = 47.73$, $p < 0.001$, partial $\eta^2 = 0.30$, with Republicans ($M = 3.94$, $SD = 1.22$) more in favor of the president than their Democratic ($M = 2.06$, $SD = 1.26$) or Independent ($M = 2.27$, $SD = 1.06$) counterparts. There was no main effect of participant race (Black or White) on attitudes toward the President, $F_{(1, 228)} = 0.47$, $p = 0.57$, nor was there an interaction between political party affiliation and participant race, $F_{(2, 228)} = 0.05$, $p = 0.96$. **Figure 2** displays these results.

To explore these results further, we examined whether ethnic identity *salience*, rather than race itself, may be an important qualifying variable in explaining pro-Trump attitudes. We examined whether political party (dummy coded with Republican = 0 to compare against Democrats and Independents) interacted with race (dummy coded with W/EA = 0) to predict racial identity salience (measured by the MEIM) using Hayes' PROCESS macro v. 3.4 (model 1). We conducted a bootstrapped moderation analysis with 5,000 resamples, which indicated a significant higher-order interaction effect between political affiliation and race to predict ethnic identity salience, $F_{(2, 228)} = 3.23$, $p = 0.041$, $R^2\Delta = 0.024$. An analysis of the simple slope effects indicated that there was a stronger difference in ethnic identity salience among White participants compared with Black participants. White Republicans ($M = 3.47$, $SD = 0.92$) reported that their racial identity was significantly more important to them than their White Democratic [$M = 3.04$, $SD = 0.91$, $b = -0.43$, 95% CI = (−0.82, −0.04)] and Independent counterparts [$M = 2.89$, $SD = 0.92$, $b = -0.59$, 95% CI = (−0.98, −0.19)]; simple slope difference $F_{(2, 228)} = 4.49$, $p < 0.001$. In contrast, no significant difference in racial identity salience was found among Black/African-American participants; simple slope difference $F_{(2, 228)} = 0.63$, $p = 0.537$. In fact, an analysis of the simple main effect of race among Republicans indicated that White Republicans felt their racial identity was equally as important to them as Black participants; $M = 3.73$, $SD = 0.83$, $b = 0.24$, 95% CI = (−0.16, 0.63). Black Democrats [$b = 0.60$, 95% CI = (0.37, 0.83)] and Black Independents ($b = 0.97$, 95% CI = (0.57, 1.36)] reported significantly higher ethnic identity salience compared with White Democrats and Independents (see **Figure 3**).

We also examined whether racial identity salience qualified the relationship between national nostalgia and pro-Trump attitudes. A moderation analysis using Hayes' PROCESS macro (model 1) indicated that higher racial identity salience somewhat strengthened the relationship between national nostalgia and positive attitudes toward Trump, but only among White participants; $\Delta R^2 = 0.03$, $F_{(1, 77)} = 3.94$, $p = 0.051$. Among those low in racial identity salience, national nostalgia was unrelated to attitudes toward Trump; $b = 0.27$, 95% CI = (−0.03, 0.58). Those moderate [$b = 0.43$, 95% CI = (0.18, 70)] and high [$b = 0.64$, 95% CI = (0.31, 0.97)] in racial identity salience showed a strong relationship between national nostalgia and pro-Trump attitudes.

[5]Although structural equation models are often used to model paths among composite variables (such as national and personal nostalgia), we opted to use a path model for these analyses given that our sample was not large enough to justify inclusion of all individual items in the model.

TABLE 1 | Descriptive statistics and bivariate correlations among study variables.

Variable1		2	3	4	5	6	7	8	9	10	12	13	14	M/Percent	SD	
1	Ethnic/Racial Identity Salience	0.91													3.38	0.92
2	Personal Nostalgia	0.15**	0.92												4.85	1.19
3	National Nostalgia	0.18**	0.32***	0.90											2.85	1.16
4	Pro-Trump Attitudes	0.24***	0.08	0.49***	0.97										2.62	1.41
5	Outgroup Threat Perception	0.07	−0.01	0.44***	0.62***	0.98									2.38	1.52
6	Racial Prejudice	0.08	0.07	0.47***	0.63***	0.63***	0.84								0.34	0.23
7	MAGA	0.14**	0.02	0.52***	0.61***	0.54***	0.65***	–							3.33	2.72
8	Political Orientation	0.12	0.01	0.46***	0.59***	0.47***	0.66***	0.67***	–						3.48	1.76
9	Republican	0.08	0.01	0.33***	0.52***	0.35***	0.51***	0.60***	0.63***	–					23.4%	–
10	Democrat	0.08	0.00	−0.28***	−0.35***	−0.25***	−0.38***	−0.47**	−0.53***	−0.49***	–				44.0%	–
11	Independent	−0.15*	−0.03	0.05	−0.14*	−0.05	−0.05	−0.02	0.02	−0.32***	−0.52***	–			25.4%	–
12	Gender	−0.05	−0.13*	−0.07	0.18**	0.18**	0.19**	0.10	0.15*	0.05	−0.12	0.10	–		57.1% (F)	–
13	Age	0.01	0.10	0.08	−0.04	−0.20**	−0.08	0.02	0.01	−0.03	0.03	0.03	−0.03	–	36.34	12.68
14	Race	0.33***	−0.08	−0.12	−0.04	−0.07	−0.17**	−0.09	−0.07	−0.04	0.20**	−0.17***	−0.12	−0.17**	54.4% (EA)	–

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$ (two-tailed).
Gender coded with female = 0, male = 1. Race coded with 0 = European American, 1 = African-American. MAGA = "How much do you believe we need to 'Make America Great Again'?" For analyses including National Nostalgia, N = 193; for all other correlations, N = 252. Cronbach alphas are displayed on the diagonal.

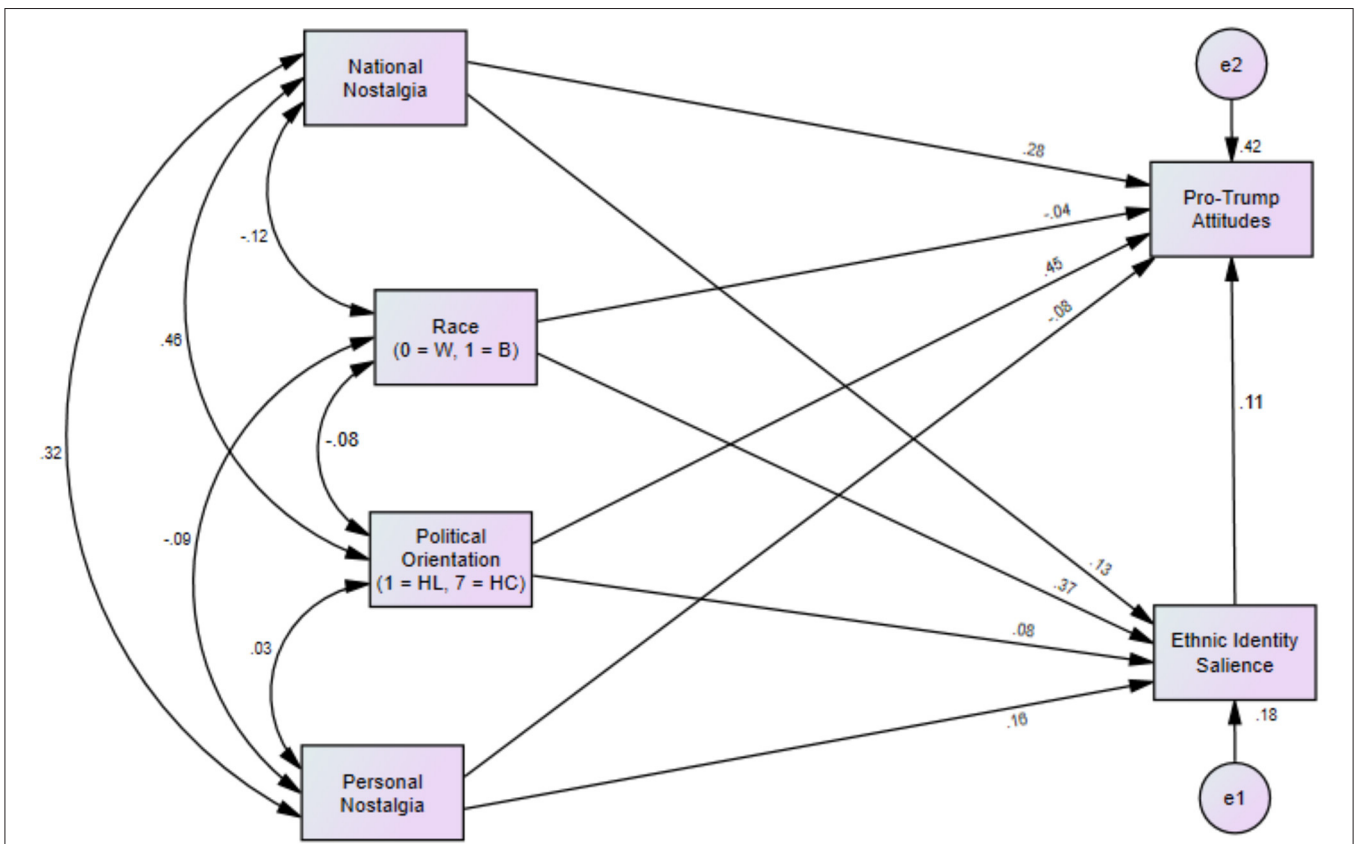

FIGURE 1 | Path analysis of relationships between national/personal nostalgia, ethnic identity, and pro-Trump attitudes (Model 1). Note. Path coefficients represent standardized estimates.

As a final examination of Research Question 1, a second path model (Path Model 2, **Figure 4**) was compared with Path Model 1 to again examine the interaction between nostalgia and ethnic identity (on pro-Trump attitudes), and the interaction between political orientation and race (assessing its relationship with ethnic identity). When interpreting this model, it is important

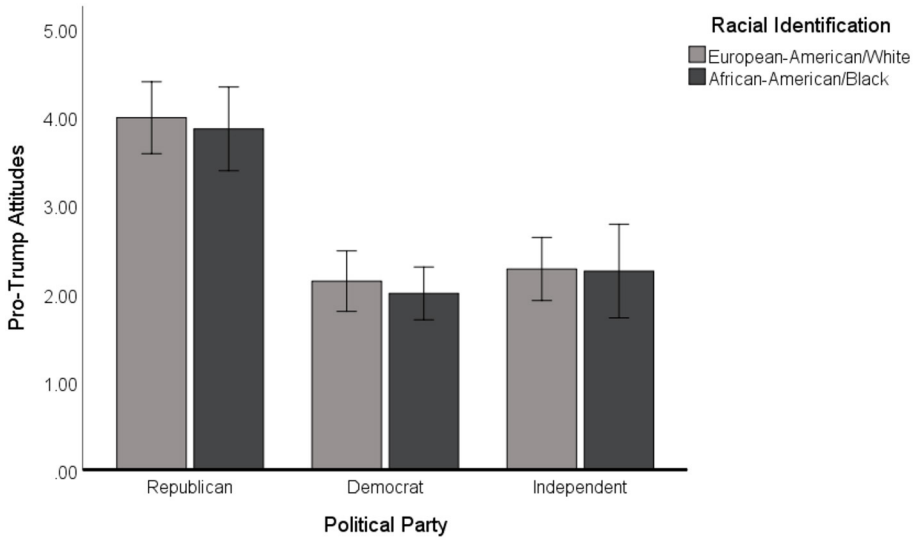

FIGURE 2 | Relationship between political party affiliation and pro-Trump attitudes by racial identity. Note. Error bars represent 95% CIs around the mean for each subgroup.

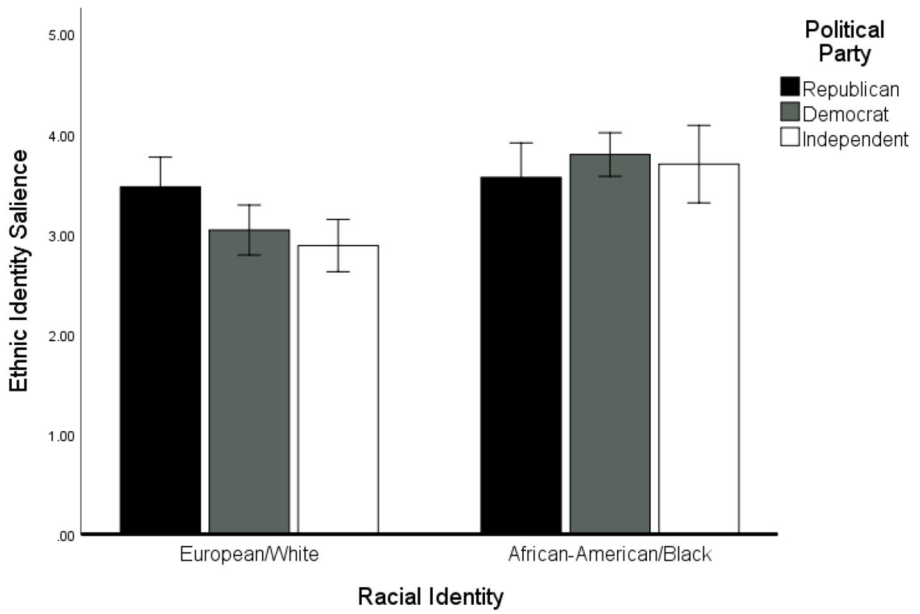

FIGURE 3 | Racial identity salience among Black/African-American and White/European-American participants of different political affiliations (Republican, Democrat, Independent). Note. Error bars represent 95% CIs around the mean for each subgroup.

to note that path models are generally considered ineffective in examining interaction effects (Meyers et al., 2016). Path Model 2 showed much improved fit relative to Path Model 1 [$\chi 2(10) = 40.47$, $p < 0.001$, CFI = 0.95, RMSEA = 0.09[6]; SRMR = 0.05]. Likely due to the limitations of path models to compute interaction effects, in contrast to what was shown in the PROCESS model, the interaction between race and political orientation (measured on a continuous scale) was not significantly associated with ethnic identity ($\beta = -0.08$, $p = 0.210$). Additionally, the interaction term between national nostalgia and ethnic identity was no longer associated with pro-Trump attitudes ($\beta = 0.13$, $p = 0.607$). This suggests that for White participants, greater national nostalgia was associated with increased ethnic identity.

[6]Although RMSEA greater than 0.08 is often considered marginal fit, RMSEA has been known to become inflated with sample sizes lower than 200 (Meyers et al., 2016).

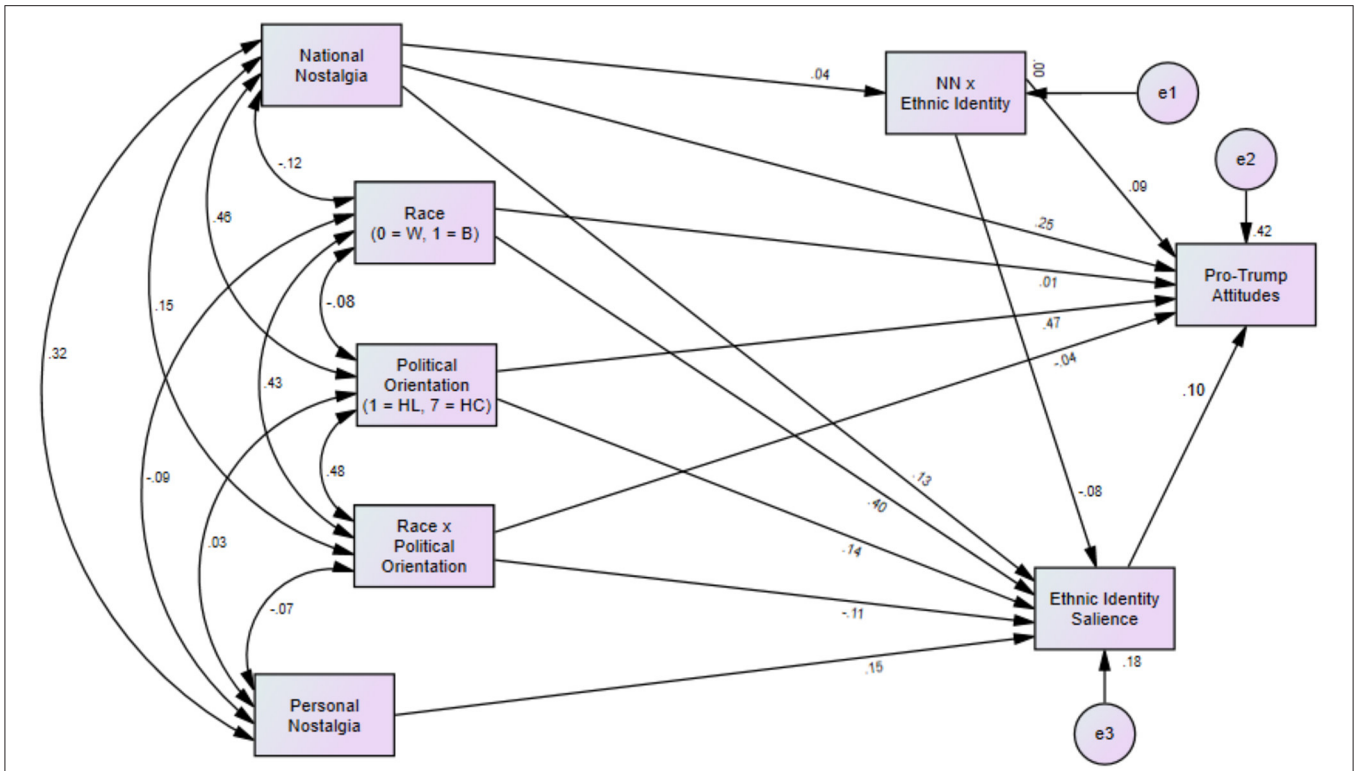

FIGURE 4 | Path analysis estimating interaction effects (race × political orientation and ethnic identity × nostalgia) on pro-Trump attitudes. Note. Path coefficients represent standardized estimates.

Research Question 2

We next examined whether national nostalgia was positively related to racial prejudice. Bivariate correlations indicated that national nostalgia was positively associated with both anti-Black racial prejudice measured by the Symbolic Racism Scale (SRS) as well as perceived realistic threat measured by the Realistic Threat Scale (RTS, see **Table 1**). To further examine the link between national nostalgia and racial prejudice, we tested whether racial prejudice moderated the link between national nostalgia and positive attitudes toward President Trump using Hayes' PROCESS macro (model 1) with 5,000 resamples. A significant moderation effect was identified. Participants reporting higher prejudice exhibited a stronger relationship between national nostalgia and pro-Trump attitudes; $\Delta R^2 = 0.05$, $F_{(1,\ 178)} = 19.60$, $p < 0.001$. Simple slopes were calculated and visualized using the interActive online utility, and are presented in **Figure 5** (McCabe et al., 2018). The relationship between national nostalgia and positive attitudes toward Trump was non-significant at low levels of prejudice (those at least −1 SD below the mean of SNS). However, for those moderate to high in racial prejudice (0, +1, or +2 SDs above the mean of SNS), national nostalgia positively predicted pro-Trump attitudes (see **Figure 5**). Interestingly, this effect was found separately for both White [$\Delta R^2 = 0.03$, $F_{(1,\ 77)} = 5.93$, $p = 0.02$] and Black participants [$\Delta R^2 = 0.09$, $F_{(1,\ 97)} = 17.44$, $p < 0.001$], but there was no significant three-way interaction between national nostalgia, prejudice, and race ($p = 0.14$), so the results in **Figure 5** are displayed for all participants.

Research Question 3

Will the relationship between national nostalgia and racial prejudice be mediated by increased threat sensitivity?

We last examined whether the relationship between national nostalgia and racial prejudice would be mediated by outgroup threat perception (measured by the Realistic Threat Scale, RTS). A moderated mediation model was constructed using Hayes' PROCESS macro (model 8) to assess whether the proposed mediational effect might differ between European-American and African-American participants. As shown in **Figure 6**, the model indicated a significant indirect effect of national nostalgia on prejudice through the mediator of perceived threat for both White/EA participants [$\beta = 0.23$, 95% CI = (0.12, 0.36)] and Black/AA participants [$\beta = 0.22$, 95% CI = (0.13, 0.32)]. The mediational indirect effect did not differ by participant race; $\beta = 0.07$, 95% CI = (−0.15, 0.13).

To examine this question in the context of a path model, Path Model 3 (**Figure 7**) displays the proposed relationships between national nostalgia and racial prejudice. Model 3 showed a moderate fit with the data, $\chi(2) = 65.80$, $p < 0.001$; CFI = 0.79; RMSEA = 0.41; SRMR = 0.07). When accounting for political orientation, race, national nostalgia, personal nostalgia, racial threat sensitivity, and racial prejudice in a structural equation mediation model, national nostalgia directly predicted racial prejudice ($\beta = 0.21$, $p < 0.001$), whereas personal nostalgia did not ($\beta = 0.03$, $p = 0.581$). The relationship between national nostalgia and racial prejudice was significantly mediated by threat sensitivity [indirect effect

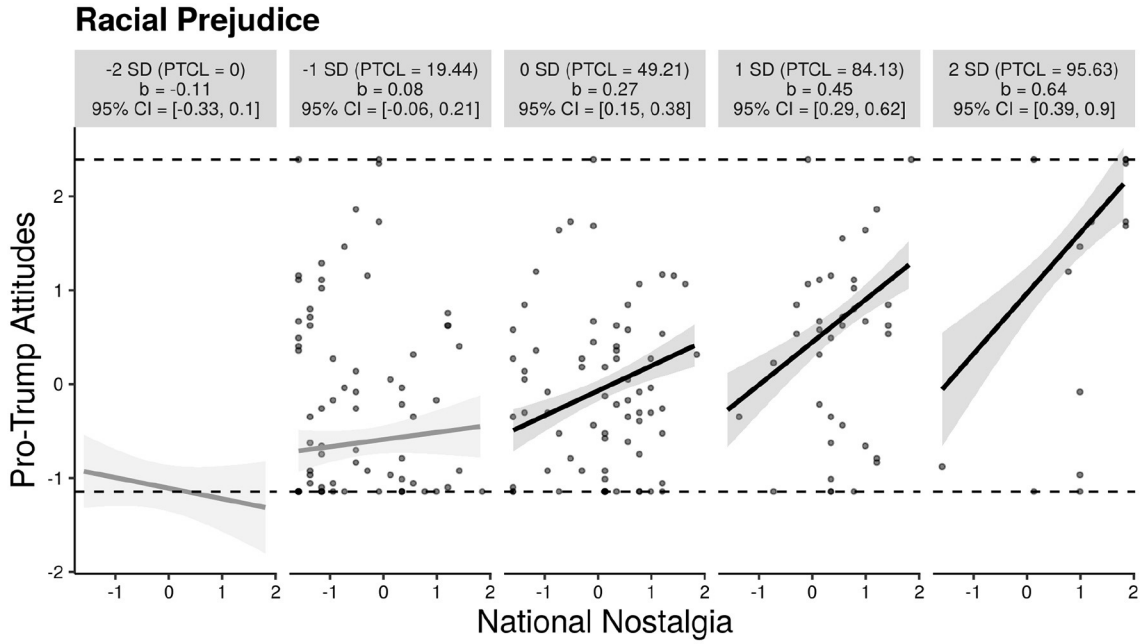

FIGURE 5 | Relationship between national nostalgia and pro-Trump attitudes moderated by anti-Black racial prejudice. Note. Plots display simple slopes at −2, −1, 0, +1, and +2 SDs away from the mean of racial prejudice for all participants. PTCL, percentile.

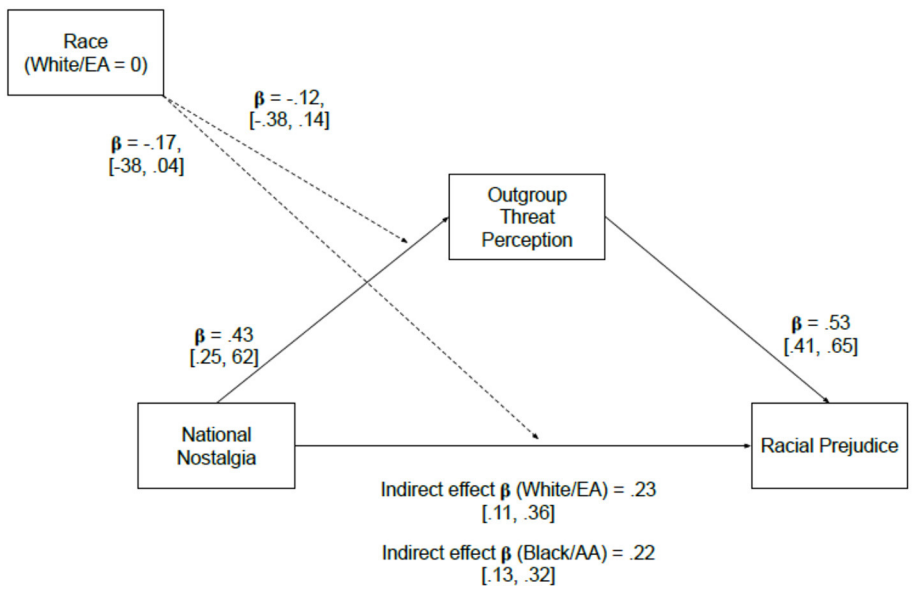

FIGURE 6 | Mediation of national nostalgia relationship with racial prejudice by outgroup threat perception, moderated by participant race.

β = 0.18, 95% bias-corrected CI (0.10, 0.26)]. Interestingly, personal nostalgia also showed a weak indirect effect on national nostalgia via threat sensitivity, but in a negative direction [indirect effect β = −0.07, 95% bias-corrected CI (−0.14, −0.01)]. This suggests that greater personal nostalgia may weakly predict lower racial prejudice via reduced racial threat sensitivity.

DISCUSSION

In our study, national nostalgia was associated with more positive feelings about President Trump, as well as increased perceived racial threat among White respondents. In contrast, personal nostalgia was unrelated to support for Trump or perceived racial threat. When assessed in a path model, personal

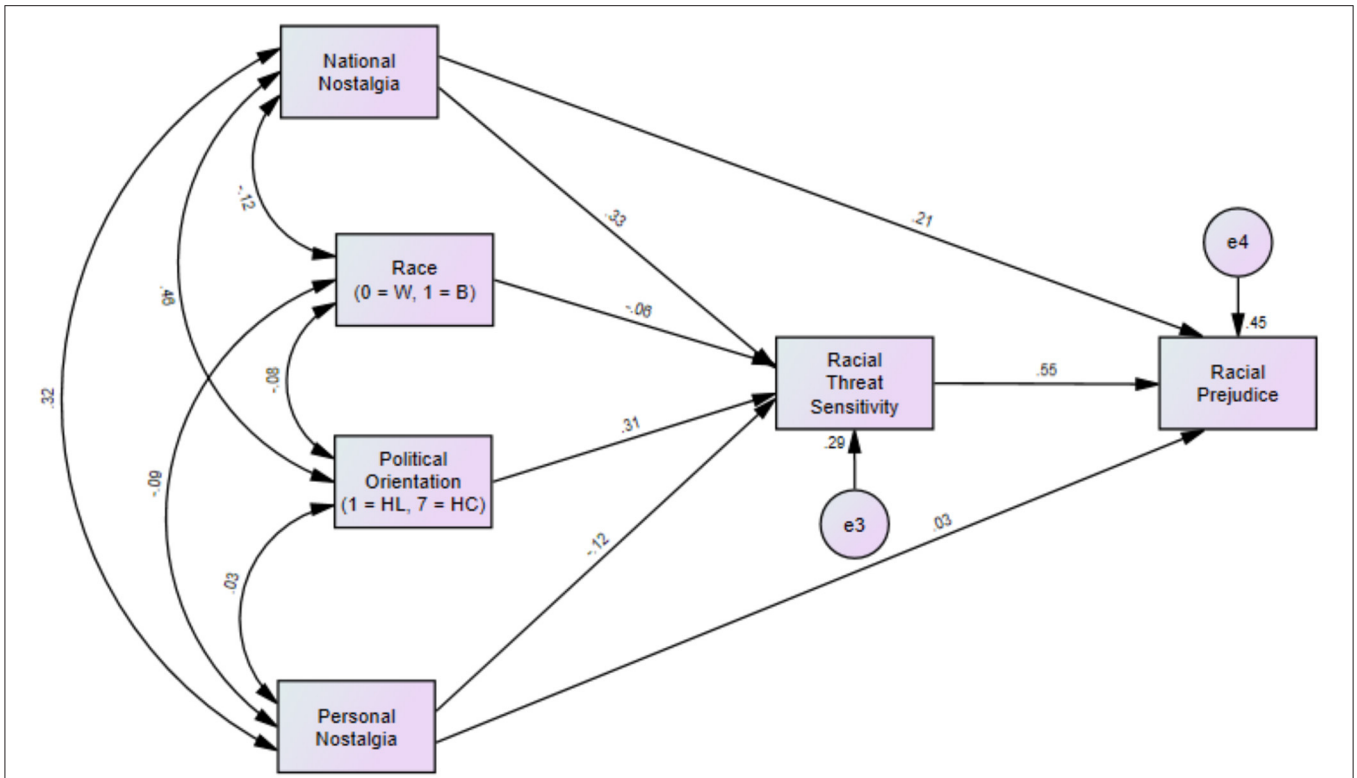

FIGURE 7 | Path analysis of relationships between national/personal nostalgia and prejudice, mediated by racial threat sensitivity (Model 3). Note. Path coefficients represent standardized estimates. Indirect effect of national nostalgia on racial prejudice through racial threat sensitivity was significant [$\beta = 0.18$; 95% bias-corrected CI (0.10, 0.26)].

nostalgia was actually associated indirectly with lower anti-Black prejudice via decreased racial threat sensitivity. These findings align with evidence from samples outside the United States (e.g., Smeekes and Verkuyten, 2015; Smeekes et al., 2020) that personal and national nostalgia are distinct experiences with unique ramifications for intergroup attitudes and relations. Though our overall finding that national nostalgia predicted Trump support could reflect a strong semantic connection between Trump and its 2016 presidential campaign slogan, it also may point to the appeal of Trump's campaign—and its right wing, populist sentiments—among those initially prone to feeling national nostalgia. To better answer this question, our next analyses investigated more closely the relationship between national nostalgia and identity.

Our first research question asked whether identity was associated with national nostalgia. We found partial evidence for this idea, as Republican participants expressed greater positive attitudes toward Trump. However, there was no evidence of a relationship between race and support for the President. At first glance, this finding does not align with media narratives and political polling suggesting that Trump's messaging appealed mostly to White voters. However, although race itself did not predict support for the President, racial *identity salience* moderated the link between national nostalgia and pro-Trump attitudes. White Republicans felt more strongly connected to their racial identity than Whites who identified as either Democrats or Independents. White Republicans also expressed significantly more positive feelings toward the President than other groups. In fact, they rated their racial identity as important as Black participants in our sample. This is notable, as it evidences further support for the influence of White identity on political attitudes (Schildkraut, 2015). As members of the majority group, White individuals typically are less likely to think of themselves in terms of race than people of color, for whom race is a more centralized component of their identity (Steck et al., 2003).

This finding suggests that the perception of demographic changes and threats to the dominant ingroup in the United States may indeed have been a critical factor in voters' choice to support Trump. Some research suggests that, in the current political climate, White Americans may increasingly identify with their Whiteness, as a result of threat resulting from shifting racial demographics (Jardina, 2019). However, there is an issue of causality, as these correlational data could indicate that the perception of such a threat may increase the salience of one's racial identity. This threat may be perceived more strongly by those for whom a White racial identity was already a more central part of their self-concept. For instance, Schildkraut (2015) found that White Americans with higher White identity scores, along with heightened perception of discrimination against Whites and feeling a sense of linked fate with other White Americans, were substantially more likely to politically endorse a White candidate. This suggests that the threat to White identity, along with

other related constructs, may influence political attitudes and may also offer an explanation on why leaders invoking national nostalgia may be so attractive to some individuals. This type of rhetoric typically emphasizes collective identity discontinuity in order to foment anxiety about the state of the country while simultaneously offering a restorative outlet by identifying racial outgroups as scapegoats.

The role of intergroup attitudes was apparent when examining the relationship between national nostalgia and pro-Trump support. We found that national nostalgia significantly predicted racial prejudice and that this relationship was mediated by perceived outgroup threat. Interestingly, this mediational effect was found among both White/EA and Black/AA participants, although the lack of a significant interaction effect may have been due to lower power. Additionally, we found a stronger relationship between national nostalgia and pro-Trump attitudes among those who reported more prejudice toward Black individuals. These findings align with evidence that group emotions motivate intergroup attitudes and, in particular, outgroup derogation when outgroups are perceived to be a threat (Smith et al., 2007; Wildschut et al., 2014). In particular, these findings align with converging evidence that the content of collective nostalgia—what individuals perceive to be "the good old days" for their identity group—reflects salient sources of perceived threat (Wohl et al., 2020). This conceptual model, highlighting the content of collective nostalgia, also explains differences between the emotional outcomes of personal and national nostalgia. Whereas, personal nostalgia enhances feelings of belonging by evoking memories of positive intrapersonal experiences in the face of ostracism or loneliness, national nostalgia may enhance belongingness by evoking positive thoughts about the "good old days" when one's group was perceived to be higher in status or less threatened by outgroups. It is also possible that national nostalgia, like personal nostalgia, may enhance feelings of continuity in its own way, by allowing individuals to feel connected to a time in which they believed their ingroup identity was less threatened or somehow stronger. Recent work supports the notion that, analogous to personal nostalgia, enhancing feelings of self-continuity (Sedikides and Wildschut, 2019), national nostalgia is linked to feelings of ingroup continuity (Smeekes et al., 2018). A study across 27 countries found that national nostalgia was associated with stronger feelings of ingroup continuity (Smeekes et al., 2018); ingroup belonging but not prejudice (outgroup rejection) appeared to mediate this link. Since relatively little research on collective nostalgia, particularly national nostalgia, has been undertaken, future work should examine these questions via multiple methods, particularly longitudinal and experimental designs, which can identify whether and to what extent self-continuity is enhanced by (or itself predicts) collective nostalgia in response to outgroup threat.

Constraint on Generalizability

These data were obtained from a cross-sectional group of US Mturk workers in the Fall of 2017, so these results are most generalizable to American middle-aged populations (Huff and Tingley, 2015). Additionally, these considerations of intergroup threat perception and prejudice are most generalizable to White/EA and Black/AA social groups within the United States, and future analysis of national nostalgia should continue to assess different ethnicities, races, and other relevant social categories.

Future Directions

These findings raise the question on whether national nostalgia stems from a desire by some to go back in time, due to perceived group identity threats. Future research should employ longitudinal or experimental methods, such as manipulating identity threat, to examine whether national nostalgia arises as a defense against perceived threats to one's ingroup. Relatedly, it is only recently that national nostalgia has been manipulated (Smeekes and Verkuyten, 2015; Wohl et al., 2020), as the majority of national nostalgia research has been at the trait level. Further work evoking national nostalgia in experimental contexts would allow us to better understand how this emotion interacts with intergroup attitudes, prejudice, and feelings of threat. We should also continue to examine how the importance of racial identity, including white racial identity, plays a role in their political attitudes and actual voting behavior. The need for further research in this area has grown substantially in recent years, especially in light of events such as those that took place in Charlottesville in 2017 and at the US Capitol Building in early 2021, in which large groups of White Nationalists gathered in events that ultimately turned violent.

An additional question to be explored is the extent to which national nostalgia operates within specific cultures and nations. Although Trump's presidential tenure has ended, the importance of these findings is not constrained only to the rhetoric from his campaign. Rather, the use of national nostalgia in political communication is widespread (Mols and Jetten, 2014; Smeekes et al., 2020) and has far-reaching implications. Future research should examine the role of national nostalgia in shaping attitudes toward demagogues in a variety of settings and when considering a variety of societal outcomes. Our findings suggest that national nostalgia may influence intergroup attitudes as a group-based emotion broadly through evoking positive emotions about one's national group identity. However, the nature of the construct suggests it may also operate through evoking shared historical knowledge and schemas about one's group within a specific nation. The phrase "make America great again" and other nostalgic political rhetoric is particularly controversial in the US because minority groups have achieved significant advances in civil rights in recent history, and a call to return to a former time may imply a call for a return to a former and less egalitarian social hierarchy. Future research on national nostalgia should explore the nuances of this emotion and its expression among various ethnic and social groups in different countries. Expressions of national nostalgia may evoke intergroup hostility to a lesser extent within nations with different histories.

Future research might also examine the extent to which perceptions of outgroup threat stem from realistic (e.g., economic) vs. symbolic (e.g., social/moral) concerns. Prior research has theorized that symbolic threats (rather than realistic threats) may be more psychologically influential on voter support for right-wing populist ideology, as concerns about immigration

and intergroup relations tend to emphasize the importance of preserving cultural homogeneity (Smeekes et al., 2020). Understanding the source and salience of perceived economic and cultural threats could help inform interventions to assuage anxiety, thus reducing prejudice toward outgroups. Finally, with the ever-evolving demographic makeup of the United States (as well as many other countries), further work in this area should include individuals who identify with other racial groups beyond White or Black, and should also be expanded to look at different identities such as gender, sexual orientation, religion, immigrant status, social class, education level, and nation of origin.

Coda

National nostalgia, a form of collective nostalgic experience, is a promising lens through which to analyze attitudes, such as political and prejudicial attitudes, particularly when combined with assessments of identity salience and perceived outgroup threat. Research to date on national nostalgia is relatively new. Although this phenomenon has been studied elsewhere (mostly in European and Asian nations), this is the first study, to our knowledge, to examine the US political landscape. Personal nostalgia—a wistful longing for one's personal past—does not have the same associations with political and group attitudes, and only moderately correlates with national nostalgia. In contrast, national nostalgia, particularly in combination with white identity salience and outgroup threat perception, predicted both prejudice and political attitudes.

There may be some irony in the possibility that national nostalgia may include beliefs for a past that never was; in this case, an America that was not as white as some recollect. Nevertheless, these national nostalgic feelings appear to be linked to important social attitudes, and thus are worthy of further investigation.

DATA AVAILABILITY STATEMENT

The datasets presented in this study can be found in online repositories. All reported study hypotheses, measures, and methods were preregistered through the Open Science Framework, available at https://osf.io/mwh6n. De-identified data and study information can be viewed at https://osf.io/6j4gm/. Some survey measures listed in the preregistration were not analyzed in this study and therefore not listed in this report.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Virginia Commonwealth University IRB. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AB, AC, and CH compiled and submitted all documentation for IRB ethics review and OSF pre-registration. AB and AC oversaw data collection and analysis. AB wrote the first draft of the manuscript. All authors collectively contributed to the conception and design of the study and assisted with subsequent revisions.

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