

# Induced nostalgia increases optimism (via social-connectedness and self-esteem) among individuals high, but not low, in trait nostalgia<sup>☆</sup>



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## ABSTRACT

Nostalgia, a sentimental longing for the past, is not merely a past-oriented emotion, but has implications for the future. Experimentally induced nostalgia fosters optimism by increasing social-connectedness (a sense of acceptance and belongingness) and self-esteem. Do these effects depend on trait nostalgia (i.e., proneness to nostalgic engagement)? Consistent with past research, induced nostalgia fostered optimism, and this effect was mediated by social-connectedness and self-esteem. More important, these effects uniquely applied to participants who were high, but not low, on trait nostalgia. That is, induced nostalgia (vs. control) was indirectly linked to heightened optimism through social-connectedness and self-esteem, for nostalgia prone individuals. Proneness to nostalgic engagement, when coupled with momentary nostalgia, confers benefits, not only in terms of greater social-connectedness and self-esteem, but also in terms of higher optimism.

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## 1. Introduction

Nostalgia is “a sentimental longing or wistful affection for the past” (Pearsal, 1998, p. 1266). Hepper, Ritchie, Sedikides, and Wildschut (2012; see also Hepper et al., 2014) examined laypersons' conceptions of nostalgia using a prototype approach, which identifies features related to the construct of interest (Rosch, 1973). They found that laypersons conceptualize nostalgia as an emotion that refers to fond recollections of events involving one's childhood or important others (e.g., family members, partners, friends). These meaningful recollections are predominantly positive, albeit with tinges of sadness or longing. Indeed, recollections of nostalgic events usually, but not always, raise positive affect (PA). Such recollections rarely have a significant impact on negative affect (NA) and, when they do, the direction of the effect varies (Sedikides et al., 2015).

Nostalgia is not merely a past-oriented emotion. It has implications for the future. In particular, nostalgia entails psychological growth. For example, in their nostalgic narratives, participants list words that denote growth (i.e., change, desire, future; Hepper et al., 2012). Furthermore, nostalgia is associated with, and gives rise to, an approach motivational orientation (Stephan et al., 2014). Finally, nostalgic (vs. control) participants report growth-related self-perceptions (e.g., curiosity, inclination toward new experiences) and growth-related behavioral intentions

(i.e., engagement in novel or self-expansive activities; Baldwin & Landau, 2014), show greater inspiration (Stephan et al., 2015), and manifest higher creativity (Van Tilburg, Sedikides, & Wildschut, 2015).

Another future-related implication of nostalgia involves optimism. Optimism is beneficially associated with a host of psychological wellbeing outcomes (e.g., proactive coping, educational attainment, fulfilling interpersonal relationships; Carver, Scheier, & Segerstrom, 2010) and physical wellbeing outcomes (e.g., immune system, pain, cancer; Rasmussen, Scheier, & Greenhouse, 2009) across cultures (Gallagher, Lopez, & Pressman, 2013). Such findings have spurred forays into the genetic (Mosing, Zietsch, Shekar, Wright, & Martin, 2009) or developmental (Ek, Remes, & Sovio, 2004) origins of optimism and optimism interventions (Fosnaugh, Geers, & Wellman, 2009).

Cheung et al. (2013) contributed to this literature by focusing on a state-level antecedent of optimism, nostalgia. They (Studies 2–4) demonstrated that experimentally induced nostalgia enhances optimism. Moreover, they (Study 4) proposed two mechanisms through which nostalgia fosters optimism: social-connectedness and self-esteem. Each step of this extended mediational chain (induced nostalgia ⇒ social-connectedness ⇒ self-esteem ⇒ optimism) had received direct or indirect support. Nostalgia augments social-connectedness (Hepper et al., 2012; Wildschut, Sedikides, Arndt, & Routledge, 2006). Also, theories (contingencies of self-worth: Crocker & Wolfe, 2001; sociometer: Leary, 2005; terror-management: Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004) and pertinent evidence identify social-connectedness as a basis for self-esteem. Moreover, self-esteem is positively associated with optimism (Chemers, Watson, & May, 2000). Cheung et al. (Study 4) indeed found that nostalgia elicited social-connectedness, which lifted

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self-esteem, which subsequently raised optimism. This extended mediational chain outperformed alternative models that involved optimism being placed in different parts of the chain or self-esteem preceding social-connectedness. Relatedly, PA did not mediate the effect of nostalgia on optimism, and nostalgia increased optimism via social-connectedness and self-esteem above and beyond PA (Studies 1–4). Nevertheless, the extended mediational sequence model has been reported only once and is in need for replication. This is one objective of the current article. Its main objective, though, is to test whether this mediational chain is moderated by trait nostalgia.

## 2. Trait nostalgia as a moderator

Nostalgia proneness entails mental travel back in time. Individuals prone to nostalgia (i.e., high on trait nostalgia) are “frequent travelers,” and thus more proficient at reaping the psychological benefits (e.g., social-connectedness, self-esteem, optimism) of induced nostalgia.

This proposition is consistent with the view that individuals who possess a trait are sensitive to situational cues that encourage expression of trait-relevant behaviors. For example, extraverts exhibit more extraverted behaviors at certain time of the day and when the number of surrounding others increases (Fleeson, 2001). Further, conscientious individuals are more likely to display conscientious behaviors (e.g., being organized, hardworking, and responsible) when a deadline is approaching, the relevant situation is structured, and the task is uninteresting or entails obligation fulfillment (Fleeson, 2007). Stated otherwise, traits do not necessarily predict well a particular behavior, as individuals in possession of a trait can behave in a way that is consistent with both high and low levels of that trait. Instead, the predictability of a trait increases in reference to aggregation of multiple occasions (Fleeson, 2004), especially ones preceded by cues likely to activate it. Accordingly, high trait nostalgia will influence occasions or outcomes (e.g., social-connectedness, self-esteem, optimism and, more important, the mediational sequence) in the presence of a situational cue or trigger that precedes those outcomes; this trigger is induced nostalgia.

We hypothesized that trait nostalgia would magnify the effect of induced nostalgia, such that this effect upon social-connectedness, self-esteem, and optimism would be more pronounced among individuals high (than low) on trait nostalgia. Similarly, we hypothesized that the effect of induced nostalgia on optimism via the sequential path from social-connectedness to self-esteem would be more pronounced among individuals high (than low) on trait nostalgia.

## 3. Method

### 3.1. Participants and design

We tested 448 participants (247 women, 198 men). Sixty of them were University of X undergraduates, who completed the study in the laboratory. The rest (388) were US residents recruited via Amazon's Mechanical Turk (MTurk) and Crowdfunder. MTurk workers had a job acceptance rate record of 95% or above, and Crowdfunder workers had the highest quality rating. In total, 652 workers responded to the study's advertisement, but we included in the analysis only those who completed the survey in full (184 MTurk workers, 204 Crowdfunder workers). We specified the settings in our recruitment procedures such that each worker could only complete the survey once. Participants' ages ranged from 18 to 75 years ( $M = 19.37$ ,  $SD = 1.47$ ). Three participants omitted gender and age information. We randomly assigned participants to the nostalgia ( $N = 232$ ) and control ( $N = 216$ ) conditions.

### 3.2. Procedure

We induced nostalgia with the Event Reflection Task (Sedikides et al., 2015). In the nostalgia condition, participants read that nostalgia is defined as: “sentimental longing for one's past or as feeling sentimental

for a fond and valued memory from one's personal past (e.g., childhood, close relationships, momentous events).” Next, they were instructed to “...think of a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic. Bring this nostalgic experience to mind. Immerse yourself in the nostalgic experience for a couple of minutes and think about how it makes you feel.” Participants in the control (i.e., ordinary autobiographical) condition were instructed to “...think of an ordinary event in your life. Specifically, try to think of a past event that is ordinary, normal, and everyday. Bring this ordinary experience to mind. Immerse yourself in the ordinary experience for a couple of minutes and think about how it makes you feel.”

Next, all participants listed four keywords summarizing the pertinent event, and spent a few minutes describing the event. Finally, they responded to a 3-item manipulation check (Wildschut et al., 2006; e.g., “Right now, I am feeling quite nostalgic”; 1 = *strongly disagree*, 6 = *strongly agree*;  $\alpha = .98$ ,  $M = 4.20$ ,  $SD = 1.55$ ).

### 3.2.1. Dependent measures

Participants completed measures of PA (Stephan, Sedikides, & Wildschut, 2012), NA (Stephan et al., 2012), social-connectedness (Hepper et al., 2012), self-esteem (Hepper et al., 2012), and optimism (Cheung et al., 2013), all preceded by the stem “Now that I have this event in mind, I feel...” (1 = *strongly disagree*, 6 = *strongly agree*). The PA measure comprised five items: happy, excited, enthusiastic, calm, relaxed ( $\alpha = .86$ ,  $M = 4.08$ ,  $SD = 1.11$ ). The NA measure also comprised five items: sad, anxious, fearful, bored, tired ( $\alpha = .80$ ,  $M = 2.00$ ,  $SD = 1.02$ ). The social-connectedness measure comprised four items: connected to loved ones, protected, loved, I can trust others ( $\alpha = .92$ ,  $M = 3.93$ ,  $SD = 1.40$ ). The self-esteem measure consisted of four items: good about myself, I like myself better, I value myself more, I have many positive qualities ( $\alpha = .94$ ,  $M = 4.26$ ,  $SD = 1.22$ ). Finally, the optimism measure also featured four items: optimistic about my future, like the sky is the limit, hopeful about my future, and ready to take on new challenges ( $\alpha = .94$ ,  $M = 4.15$ ,  $SD = 1.28$ ).

Lastly, participants completed a trait nostalgia inventory, the Southampton Nostalgia Scale (Barrett et al., 2010; Routledge, Arndt, Sedikides, & Wildschut, 2008). They responded to seven items reflecting nostalgia proneness (1 = *not at all*, 7 = *very much*; e.g., “How often do you experience nostalgia”). We aggregated responses to form a trait nostalgia index ( $\alpha = .93$ ,  $M = 4.19$ ,  $SD = 1.13$ ).

## 4. Results

The results were unqualified by age or gender, and we excluded these variables from subsequent analyses.

### 4.1. Trait nostalgia

We ascertained that the nostalgia manipulation did not influence trait nostalgia.

Participants in the nostalgia ( $M = 4.23$ ,  $SD = 1.14$ ) and control ( $M = 4.14$ ,  $SD = 1.12$ ) conditions reported equivalent levels of trait nostalgia,  $F(1, 446) = 0.73$ ,  $p = .39$ ,  $\eta_p^2 = .002$ .

### 4.2. Manipulation check

To examine whether induced nostalgia elicited more state nostalgia, and whether this effect was contingent on trait nostalgia, we carried out a moderation analysis using Hayes's PROCESS macro (2013; model 1). As intended, induced nostalgia elevated state nostalgia,  $\beta = 1.641$ ,  $SE = .114$ ,  $t(444) = 14.404$ ,  $p < .001$ . Also, trait nostalgia was positively associated with state nostalgia,  $\beta = 0.435$ ,  $SE = .050$ ,  $t(444) = 8.663$ ,  $p < .001$ . The Induced Nostalgia  $\times$  Trait Nostalgia interaction was not significant,  $\beta = -0.132$ ,  $SE = .101$ ,  $t(444) = -1.313$ ,  $p = .190$ . Induced nostalgia elevated state nostalgia among participants high and low on trait nostalgia to an equivalent degree. The manipulation was effective.

#### 4.3. PA and NA

To test whether induced nostalgia elicited more PA and NA, and whether these effects were contingent upon trait nostalgia, we conducted two moderation analyses with Hayes's PROCESS macro (2013; model 1). As expected, induced nostalgia elevated PA,  $\beta = .233$ ,  $SE = .101$ ,  $t(444) = 2.310$ ,  $p = .021$ . Further, trait nostalgia was positively associated with PA,  $\beta = 0.242$ ,  $SE = .044$ ,  $t(444) = 5.459$ ,  $p < .001$ . The Induced Nostalgia  $\times$  Trait Nostalgia interaction was not significant,  $\beta = 0.138$ ,  $SE = .089$ ,  $t(444) = 1.553$ ,  $p = .121$ . Induced nostalgia elevated PA among participants high and low on trait nostalgia to an equivalent degree.

Consistent with past research, induced nostalgia had no effect on NA,  $\beta = .006$ ,  $SE = .097$ ,  $t(444) = .063$ ,  $p = .950$ . Also, trait nostalgia was unassociated with NA,  $\beta = 0.020$ ,  $SE = .043$ ,  $t(444) = .467$ ,  $p = .641$ , and the Induced Nostalgia  $\times$  Trait Nostalgia interaction was not significant,  $\beta = -0.046$ ,  $SE = .085$ ,  $t(444) = -.544$ ,  $p = .587$ .

#### 4.4. Social-connectedness

We carried out a moderation analysis (Hayes's, 2013 PROCESS macro, model 1) to examine whether induced nostalgia fostered social-connectedness, and whether this effect was contingent on trait nostalgia. In replication of prior findings (Cheung et al., 2013, Study 4), induced nostalgia elevated social-connectedness,  $\beta = 0.618$ ,  $SE = .123$ ,  $t(444) = 5.040$ ,  $p < .001$ . Moreover, trait nostalgia was positively associated with social-connectedness,  $\beta = 0.354$ ,  $SE = .054$ ,  $t(444) = 6.552$ ,  $p < .001$ . The crucial Induced Nostalgia  $\times$  Trait Nostalgia interaction was significant,  $\beta = 0.237$ ,  $SE = .108$ ,  $t(444) = 2.189$ ,  $p = .029$ . Induced nostalgia elevated social-connectedness among participants high on trait nostalgia (+1 SD),  $\beta = 0.946$ ,  $SE = .194$ ,  $t(444) = 4.877$ ,  $p < .001$ , but not among participants low on trait nostalgia (-1 SD),  $\beta = 0.235$ ,  $SE = .213$ ,  $t(444) = 1.101$ ,  $p = .272$ .

#### 4.5. Self-esteem

We conducted a moderation analysis (Hayes's, 2013 PROCESS macro; model 1) to find out if induced nostalgia increased self-esteem, and if this effect depended on trait nostalgia. Induced nostalgia increased self-esteem,  $\beta = 0.264$ ,  $SE = .109$ ,  $t(444) = 2.413$ ,  $p = .016$ , replicating Cheung et al. (2013, Study 4). Also, trait nostalgia was positively related to self-esteem,  $\beta = 0.297$ ,  $SE = .048$ ,  $t(444) = 6.166$ ,  $p < .001$ . Crucially, the Induced Nostalgia  $\times$  Trait Nostalgia interaction was significant,  $\beta = 0.268$ ,  $SE = .097$ ,  $t(444) = 2.779$ ,  $p = .006$ . Induced nostalgia increased self-esteem among participants high on trait nostalgia,  $\beta = 0.635$ ,  $SE = .173$ ,  $t(444) = 3.673$ ,  $p < .001$ , but not among those low on trait nostalgia,  $\beta = -0.170$ ,  $SE = .190$ ,  $t(444) = -0.893$ ,  $p = .372$ .

#### 4.6. Optimism

We conducted a moderation analysis (Hayes's, 2013 PROCESS macro; model 1) to examine whether induced nostalgia raised optimism, and this effect depended on trait nostalgia. Induced nostalgia raised optimism,  $\beta = 0.282$ ,  $SE = .117$ ,  $t(444) = 2.423$ ,  $p = .016$ , replicating Cheung et al. (2013, Study 4). Trait nostalgia was positively associated with optimism,  $\beta = 0.266$ ,  $SE = .051$ ,  $t(444) = 5.169$ ,  $p < .001$ . Importantly, the Induced Nostalgia  $\times$  Trait Nostalgia interaction was significant,  $\beta = 0.262$ ,  $SE = .103$ ,  $t(444) = 2.549$ ,  $p = .011$ . Induced nostalgia raised optimism among participants high on trait nostalgia,  $\beta = 0.645$ ,  $SE = .184$ ,  $t(444) = 3.501$ ,  $p < .001$ , but not among those low on trait nostalgia,  $\beta = -0.142$ ,  $SE = .203$ ,  $t(444) = -0.698$ ,  $p = .485$  (Fig. 1).

#### 4.7. Moderated mediational analyses

We present, in Table 1, the zero-order correlations between induced nostalgia (contrast coded:  $-1 = control$ ,  $1 = nostalgia$ ), trait nostalgia

(centered), the Induced Nostalgia  $\times$  Trait Nostalgia interaction, and the dependent measures. These correlations indicate that social-connectedness and self-esteem qualify as potential mediators of the Induced Nostalgia  $\times$  Trait Nostalgia interaction effect on optimism. To assess moderated mediation, we tested a model in which induced nostalgia, trait nostalgia, and the Induced Nostalgia  $\times$  Trait Nostalgia interaction predicted optimism via the sequential path from social-connectedness to self-esteem. This model allowed us to test whether trait nostalgia moderates the effect of induced nostalgia on optimism via social-connectedness and self-esteem (Induced Nostalgia  $\times$  Trait Nostalgia interaction  $\Rightarrow$  optimism  $\Rightarrow$  self-esteem  $\Rightarrow$  social-connectedness), while controlling for the main effects of induced nostalgia and trait nostalgia (Fig. 2).

We conducted the analyses using AMOS within SPSS for Windows. We calculated bias-corrected 95% bootstrap confidence intervals (CIs) and bootstrap standard errors for direct and indirect effects (10,000 bootstrap samples). Table 2 presents tests of direct and indirect effects. We focus on the pivotal Induced Nostalgia  $\times$  Trait Nostalgia interaction effect on optimism via social-connectedness and self-esteem.

First, we examined the direct effects. The Induced Nostalgia  $\times$  Trait Nostalgia interaction predicted higher social-connectedness (above and beyond induced nostalgia and trait nostalgia; path j). Social-connectedness, in turn, predicted higher self-esteem (above and beyond induced nostalgia, trait nostalgia, and their interaction; path d). Self-esteem subsequently predicted higher optimism (above and beyond induced nostalgia, trait nostalgia, their interaction, and social-connectedness; path f). The Induced Nostalgia  $\times$  Trait Nostalgia interaction did not directly predict higher self-esteem (above and beyond induced nostalgia, trait nostalgia, and social-connectedness; path k), or optimism (above and beyond induced nostalgia, trait nostalgia, social-connectedness, and self-esteem; path l). These tests of direct effects provide prima facie evidence for the postulated Induced Nostalgia  $\times$  Trait Nostalgia interaction effect on optimism via social-connectedness and self-esteem.

Next, we examined the indirect effects. There was a significant total indirect effect of the Induced Nostalgia  $\times$  Trait Nostalgia interaction on optimism via social-connectedness and self-esteem. We partitioned this total indirect effect into a significant indirect effect via social-connectedness ( $j * e$ ) and a significant indirect effect via self-esteem. In turn, we partitioned the indirect effect via self-esteem into a non-significant indirect effect that was independent of social-connectedness ( $k * f$ ) and a significant indirect effect that was mediated by social-connectedness ( $j * d * f$ ). This latter indirect effect ( $j * d * f$ ) provides a formal test of the postulated Induced Nostalgia  $\times$  Trait Nostalgia interaction effect on optimism via social-connectedness and self-esteem. As hypothesized, the effect of nostalgia on optimism via social-connectedness and self-esteem was more pronounced for participants high (vs. low) on trait nostalgia.

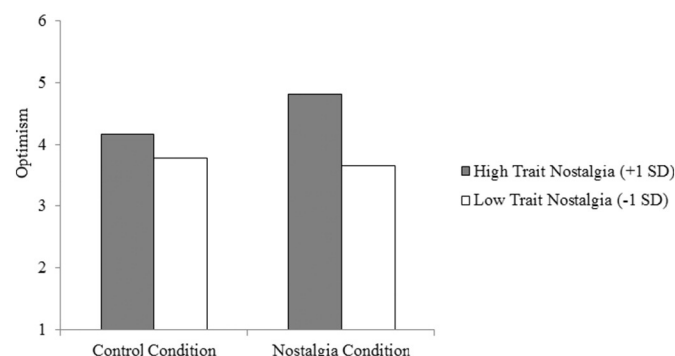


Fig. 1. Optimism as a function of induced nostalgia and trait nostalgia.

**Table 1**  
Zero-order Correlations among Induced Nostalgia, Trait Nostalgia, Induced Nostalgia × Trait Nostalgia interaction, and dependent measures.

	Zero-order correlations					
	1	2	3	4	5	6
1. IN	–	–	–	–	–	–
2. TN	.04	–	–	–	–	–
3. IN × TN	–.01	.05	–	–	–	–
4. Social-connectedness	.23**	.30**	.11*	–	–	–
5. Self-esteem	.12*	.28**	.14**	.69**	–	–
6. Optimism	.12*	.24**	.13**	.60**	.71**	–

Note. IN = Induced Nostalgia, TN = Trait Nostalgia. Induced Nostalgia was contrast coded (–1 = control, 1 = nostalgia). Trait nostalgia was mean-centered. N = 448.

\* p < .05.

\*\* p < .01.

4.7.1. Model fit and alternative models

To assess model fit, we trimmed the nonsignificant direct path from the Induced Nostalgia × Trait Nostalgia interaction to optimism, and then calculated fit indices for the resultant nonsaturated model (Fig. 2, minus path l). This model provided good fit (Table 3). We tested alternative moderated mediational models. Within a set of models for the same data, the Akaike Information Criterion (AIC; Akaike, 1974) and Expected Cross Validation Index (ECVI; Browne & Cudeck, 1993) can be used to compare competing models that need not be nested (smaller is better). However, any two models that have the same paths between the same variables will have the same fit, even if some paths are in a different direction. For example, consider an alternative model in which self-esteem precedes social-connectedness. To test this model, one cannot simply reverse the order of social-connectedness and self-esteem in Fig. 2. Doing so would create an alternative model that differs from Fig. 2 only in the direction of the link between social-connectedness and self-esteem, and would therefore have the same fit as the original model. Accordingly, we tested a series of parsimonious models in which each variable predicted only the variable that immediately followed it in the postulated causal chain. This enabled us to evaluate which ordering of variables produced the lowest AIC and ECVI values. We present the fit indices in Table 3.

All models included induced nostalgia, trait nostalgia, and the Induced Nostalgia × Trait Nostalgia interaction as predictors. Because nostalgia was manipulated, its position is fixed. However, social-connectedness, self-esteem, and optimism can be arranged in six different sequences. We tested these and found that the five alternative models produced markedly higher AIC and ECVI values (worse fit) than the hypothesized model, in which the Induced Nostalgia × Trait Nostalgia predicts optimism via social-connectedness and self-esteem. The original model, in

**Table 2**  
Tests of direct and indirect effects in the Fig. 2 moderated mediational model.

Effect	Path	Coeff.	SE	95% CI
<i>Direct effects</i>				
IN ⇒ social-connectedness	a	.309**	.062	.188 to .430
IN ⇒ self-esteem	b	–.049	.039	–.125 to .027
IN ⇒ optimism	c	.006	.046	–.083 to .097
Social-connectedness ⇒ self-esteem	d	.586**	.037	.512 to .658
Social-connectedness ⇒ optimism	e	.189**	.057	.079 to .302
Self-esteem ⇒ optimism	f	.585**	.058	.470 to .696
TN ⇒ social-connectedness	g	.350**	.059	.236 to .467
TN ⇒ self-esteem	h	.087*	.045	.002 to .176
TN ⇒ optimism	i	.024	.044	–.060 to .113
IN × TN ⇒ social-connectedness	j	.119*	.059	.003 to .234
IN × TN ⇒ self-esteem	k	.065	.042	–.016 to .150
IN × TN ⇒ optimism	l	.030	.042	–.051 to .113
<i>Indirect effect: IN ⇒ self-esteem</i>				
Via social-connectedness	a * d	.181**	.037	.109 to .254
<i>Indirect effect: IN ⇒ optimism</i>				
Total		.136**	.043	.050 to .222
Via social-connectedness	a * e	.058**	.022	.021 to .104
Via self-esteem		.077*	.033	.014 to .145
<i>Independent of social-connectedness</i>				
Mediated by social-connectedness	a * d * f	.106**	.025	.061 to .157
<i>Indirect effect: TN ⇒ self-esteem</i>				
Via social-connectedness	g * d	.205**	.037	.134 to .278
<i>Indirect effect: TN ⇒ optimism</i>				
Total		.237**	.045	.150 to .326
Via social-connectedness	g * e	.066**	.024	.025 to .118
Via self-esteem		.171**	.037	.101 to .247
<i>Independent of social-connectedness</i>				
Mediated by social-connectedness	g * d * f	.120**	.024	.076 to .169
<i>Indirect effect: IN × TN ⇒ self-esteem</i>				
Via social-connectedness	j * d	.069*	.035	.001 to .141
<i>Indirect effect: IN × TN ⇒ optimism</i>				
Total		.101*	.043	.017 to .188
Via social-connectedness	j * e	.022*	.013	.001 to .050
Via self-esteem		.078*	.035	.013 to .152
<i>Independent of social-connectedness</i>				
Mediated by social-connectedness	k * f	.038	.025	–.010 to .088
Total	j * d * f	.041*	.022	.001 to .085

Note. IN = Induced Nostalgia, TN = Trait Nostalgia. N = 448.

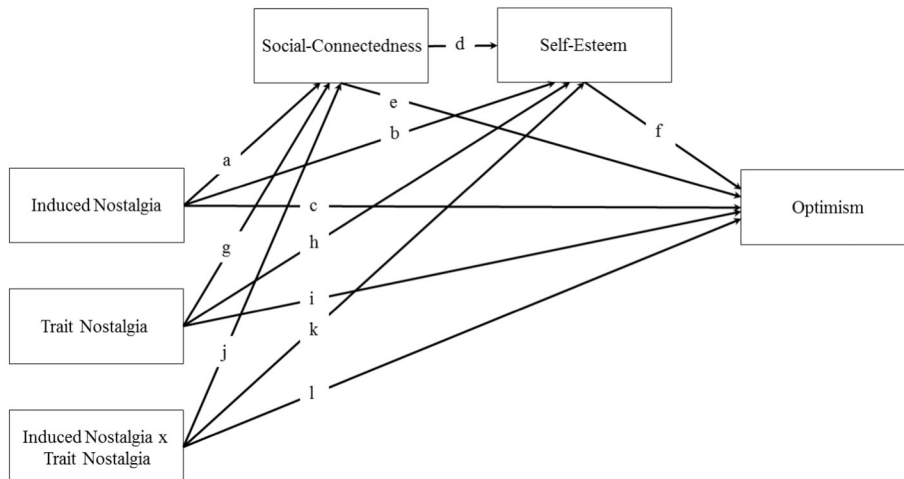
\* p < .05.

\*\* p < .01.

addition to being firmly grounded in prior theory, provided a superior description of the data.

4.7.2. Role of PA

Finally, we examined whether PA mediated the effect of the Induced Nostalgia × Trait Nostalgia interaction on optimism. Specifically, we tested the Fig. 2 model with PA as an additional mediator (Fig. 2, plus



**Fig. 2.** Moderated mediational model in which the Induced Nostalgia × Trait Nostalgia interaction predicts optimism via social-connectedness and self-esteem (Path j \* Path d \* Path f).



**Table 3**  
Comparison of alternative moderated mediational models.

	$\chi^2$	p of $\chi^2$	SRMSR	RMSEA	CFI	AIC	ECVI
<i>Saturated model</i>						42.00	.09
Original model 1	.662	.42	.006	<.001	1	40.66	.09
Original model 2	4.691	<.001	.043	.091	.96	60.84	.14
Alt 1	17.802	<.001	.073	.194	.83	152.61	.34
Alt 2	23.458	<.001	.083	.224	.77	192.20	.43
Alt 3	20.683	<.001	.082	.210	.80	172.78	.39
Alt 4	25.126	<.001	.093	.232	.76	203.88	.46
Alt 5	9.240	<.001	.067	.136	.92	92.68	.21

Note. SRMSR = Standardized Root Mean Square Residual. RMSEA = Root Mean Square Error of Approximation. CFI = Comparative Fit Index. AIC = Akaike Information Criterion. ECVI = Expected Cross Validation Index. Smaller AIC and ECVI values indicate better model fit. Original model 1: Fig. 2, minus path l. Original model 2: Induced nostalgia, trait nostalgia, Induced Nostalgia  $\times$  Trait Nostalgia  $\Rightarrow$  social-connectedness  $\Rightarrow$  self-esteem  $\Rightarrow$  optimism. Alt 1 = Alternative model 1 (induced nostalgia, trait nostalgia, Induced Nostalgia  $\times$  Trait Nostalgia  $\Rightarrow$  social-connectedness  $\Rightarrow$  optimism  $\Rightarrow$  self-esteem). Alt 2 = Alternative model 2 (induced nostalgia, trait nostalgia, Induced Nostalgia  $\times$  Trait Nostalgia  $\Rightarrow$  self-esteem  $\Rightarrow$  social-connectedness  $\Rightarrow$  optimism). Alt 3 = Alternative model 3 (induced nostalgia, trait nostalgia, Induced Nostalgia  $\times$  Trait Nostalgia  $\Rightarrow$  self-esteem  $\Rightarrow$  optimism  $\Rightarrow$  social-connectedness). Alt 4 = Alternative model 4 (induced nostalgia, trait nostalgia, Induced Nostalgia  $\times$  Trait Nostalgia  $\Rightarrow$  optimism  $\Rightarrow$  social-connectedness  $\Rightarrow$  self-esteem). Alt 5 = Alternative model 5 (induced nostalgia, trait nostalgia, Induced Nostalgia  $\times$  Trait Nostalgia  $\Rightarrow$  optimism  $\Rightarrow$  self-esteem  $\Rightarrow$  social-connectedness).

a path from induced nostalgia to optimism via PA, a path from trait nostalgia to optimism via PA, and a path from the Induced Nostalgia  $\times$  Trait Nostalgia interaction to optimism via PA).

As expected, the indirect effect of induced nostalgia on optimism via PA was not significant,  $M_{indirect\ effect} = .020$ ,  $SE = .019$ , 95% CI = [−.007, .064]. The indirect effect of trait nostalgia on optimism via PA was not significant either,  $M_{indirect\ effect} = .021$ ,  $SE = .016$ , 95% CI = [−.007, .056]. Similarly, the indirect effect of the Induced Nostalgia  $\times$  Trait Nostalgia interaction on optimism via PA was not significant,  $M_{indirect\ effect} = .006$ ,  $SE = .007$ , 95% CI = [−.005, .021]. Furthermore, the vital extended path from the Induced Nostalgia  $\times$  Trait Nostalgia interaction to optimism via social-connectedness and self-esteem ( $j * d * f$ ) remained significant,  $M_{indirect\ effect} = .038$ ,  $SE = .020$ , 95% CI = [.001, .081]. In all, we obtained support for a model in which the effect of nostalgia is mediated by social-connectedness and concomitant self-esteem for participants high (vs. low) on trait nostalgia, above and beyond PA.

## 5. Discussion

Nostalgia, when experimentally induced, has implications for future projection and psychological growth. Specifically, nostalgia strengthens approach motivation (Stephan et al., 2014), inspiration (Stephan et al., 2015), curiosity (Baldwin & Landau, 2014), and creativity (Van Tilburg et al., 2015). More relevant to the objectives of this article, nostalgia fosters optimism (Cheung et al., 2013), and it does so by raising social-connectedness and, in turn, self-esteem.

We asked whether the effects of induced nostalgia on social-connectedness, self-esteem, and optimism, as well as the mediational sequence from social-connectedness through self-esteem to optimism, is moderated by trait nostalgia. We hypothesized that it is. Individuals prone to nostalgic engagement, we reasoned, have developed a certain expertise in harvesting the psychological benefits of nostalgia, and are particularly capable of doing so following a cue or trigger, namely momentary activation of the emotion (Fleeson, 2007). In support of the hypothesis, trait nostalgia moderated (a) the effect of induced nostalgia on social-connectedness, self-esteem, and optimism, as well as (b) the indirect effect of induced nostalgia on optimism via social-connectedness and self-esteem. Put otherwise, induced nostalgia elevates optimism by increasing social-connectedness and subsequently self-esteem, but only among persons who are dispositionally high (compared to low) on nostalgia. Further, consistent with Cheung et al. (2013, Study 4), these effects occurred above and beyond PA.

We tested a complex serial mediational model with a measurement-of-mediation design, which has well-documented limitations (Bullock, Green, & Ha, 2010). Nevertheless, we regard the serial mediational analysis as informative, because it placed the hypothesized model (Fig. 2) at risk (Fiedler, Schott, & Meiser, 2011). That is, the postulated mediational chain comprised several links. Failure of even a single link would have

invalidated the hypothesized model, but each link held. Regardless, future research would need to adopt an experimental-causal-chain approach (Spencer, Zanna, & Fong, 2005) to establish a basis for causality. This approach would necessitate manipulating social-connectedness and assessing its effect on self-esteem, as well as manipulating self-esteem and assessing its effects on optimism.

As stated above, the findings were aligned with the theoretical view that behavioral expressions of traits are situationally contingent (Fleeson, 2007). Individuals with a proclivity toward nostalgic engagement were more adept at harvesting nostalgia's psychological benefits. It would be interesting to test whether such individuals also reap nostalgia's benefits when exposed to common triggers of nostalgia such as keepsakes and sensory cues (e.g., scents; Reid, Green, Wildschut, & Sedikides, 2015). It would also be worth expanding the current cross-sectional design to longitudinal designs to assess if induced nostalgia, interactively with trait nostalgia, predicts positive psychological outcomes over time.

In conclusion, chronic nostalgic engagement has beneficial implications for wellbeing when coupled with temporary nostalgia induction. The combination magnifies the psychological capital of nostalgia. Specifically, the combination strengthens social-connectedness, self-esteem, and optimism, and it fosters optimism by increasing sequentially social-connectedness and self-esteem.

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