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Nostalgia counteracts the negative relation between threat appraisals and intrinsic motivation in an educational context

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ABSTRACT

We examined the coping potential of nostalgia in an educational setting. In particular, we investigated whether nostalgia can protect students from the pernicious link between threat appraisal and low intrinsic motivation. Undergraduate students ($N = 382$) reported threat and challenge appraisals in regards to a class they were taking, their nostalgia, as well as their intrinsic motivation. Threat appraisals predicted reduced intrinsic motivation, but were also prognostic of increased nostalgia. Nostalgia, in turn, was associated with increased intrinsic motivation. Thus, the negative direct association of threat appraisals with intrinsic motivation was counteracted by a positive indirect association via increased nostalgia—a statistical suppression pattern. Nostalgia appears to have implications for achievement contexts.

1. Introduction

Although encumbered historically by a negative reputation (Batcho, 2013b; Sedikides, Wildschut, & Baden, 2004), the emotion of nostalgia has now emerged as a coping resource. Indeed, nostalgia, “a sentimental longing or wistful affection for the past” (*The New Oxford Dictionary of English*, 1998, p. 1266), buffers against various forms of adversity, thus maintaining psychological homeostasis (Sedikides et al., 2015; Wildschut, Sedikides, & Cordaro, 2011). In this article, we examine whether nostalgia can shield against the consequences of threat appraisals in educational settings, that is, if nostalgia counteracts the decline in intrinsic motivation that is associated with threat appraisals.

1.1. Nostalgia as a psychological resource

Nostalgia is regarded as a past-oriented, self-relevant, intensely social, and ambivalent but predominantly positive emotion. It is past-oriented as it refers to fond and tender reflections on aspects of one's past, typically involving childhood, relationships, or keepsakes (Hepper, Ritchie, Sedikides, & Wildschut, 2012). It is self-relevant, as the self is the protagonist of the narrated aspect of the past (Van Tilburg, Wildschut, & Sedikides, 2017; Wildschut, Sedikides, Arndt, & Routledge, 2006). Importantly, nostalgia is also an intensely social emotion. Nostalgic narratives usually pertain to momentous events

from one's life (e.g., anniversaries, graduations, vacations) in which the self is surrounded by close others (i.e., family members, partners, friends; Abeyta, Routledge, Roynance, Wildschut, & Sedikides, 2015; Holak & Havlena, 1992; Wildschut et al., 2006). Additionally, nostalgizing makes one feel supported, protected, and loved (Wildschut et al., 2006; Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010; Zhou, Sedikides, Wildschut, & Gao, 2008). Finally, nostalgia is a bittersweet, albeit mostly sweet than bitter, emotion: in nostalgizing, one experiences pleasant affect but tinged with longing (Batcho, 2007; Holak & Havlena, 1998; Sedikides & Wildschut, 2016a). Nostalgia is felt by persons of varying ages (Hepper, Wildschut, Sedikides, Robertson, & Routledge, 2018; Wildschut et al., 2006; Zhou et al., 2008) and across cultures (Hepper et al., 2014; Sedikides, Wildschut, Routledge, Arndt, & Zhou, 2009).

Nostalgia can be elicited through social encounters, music, smells, tastes, or keepsakes. However, it can also be elicited by stimuli that instigate discomfiting internal states, such as loneliness, meaningfulness, existential angst, self-discontinuity (i.e., disconnection between one's past and present self), unfairness or organizational decision-making procedures, or boredom. On those occasions, nostalgia fulfills a homeostatic role: It counteracts the effect of the aversive stimuli on internal states. Nostalgia, in particular, alleviates negative affect, loneliness, meaningfulness, existential angst, organizational burnout, and boredom. These findings have been obtained both in

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laboratory experiments and in correlational (cross-sectional and longitudinal) investigations (Leunissen, Sedikides, Wildschut, & Cohen, 2018; Routledge, Wildschut, Sedikides, & Juhl, 2013; Sedikides, Wildschut, Arndt, & Routledge, 2008; Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015; Van Dijke, Wildschut, Leunissen, & Sedikides, 2015). However, although the palliative function of nostalgia has been documented in social settings, its analogous role in educational or achievement settings has not been addressed. We turn to this issue in the present research.

1.2. Nostalgia as a response to threat appraisals

When pursuing goals, individuals face personally significant and thus stressful tasks, which they may appraise as either threats or challenges (Lazarus, 1991; Lazarus & Folkman, 1984). Threat appraisal refers to potential harm or loss, and usually occurs when demands are perceived to exceed resources, whereas challenge appraisal refers to the potential opportunity for mastery, growth or gain, and is experienced when demands are perceived as being within one's coping ability. Commonly, threat appraisal is associated with avoidance motivation and challenge appraisal with approach motivation (Elliot & Harackiewicz, 1996).

As previous studies have shown, construing events in terms of threat has undesirable consequences. In general, threat appraisal predicts negative emotions and greater stress, which also manifest on a physiological level (e.g., cardiac activity; Blascovich & Tomaka, 1996; Jamieson, 2017). McGregor and Elliot (2002) studied threat and challenge appraisals in an educational context and demonstrated that threat appraisal is linked to performance-avoidance goals, procrastination, and the desire to escape the exam situation. Also, studies by Putwain and colleagues (Putwain & Remedios, 2014; Putwain & Symes, 2011a, 2011b) on cognitive appraisals and learning indicated that threat appraisal results in higher test anxiety, lower self-efficacy, and eventually lower performance. Finally, and particularly relevant to our study, threat appraisal is negatively related to intrinsic motivation (Ickson, Roskes, & Moran, 2014; Kavussanu, Dewar, & Boardley, 2014; Putwain & Remedios, 2014; Putwain & Symes, 2011a, 2011b). For example, in an investigation by Putwain and Remedios (2014), students' appraisal of a teacher's fear appeal as threatening predicted lower intrinsic motivation. The powerful role of intrinsic motivation for performance has been well-documented in the psychological literature (Cerasoli, Nicklin, & Ford, 2014; Deci & Ryan, 1985; Ryan & Deci, 2000). The influence of threat appraisal on intrinsic motivation was the main focus of the current study.

The possible relation between threat-challenge appraisals and nostalgia can be predicted from the homeostatic model of nostalgia (Sedikides, Wildschut, Routledge, Arndt, Hepper, & Zhou, 2015). According to this model, an adverse stimulus (e.g., loneliness) triggers nostalgia, and nostalgia, in turn, counteracts the negative state (e.g., augmenting perceived social support; Zhou et al., 2008). Paradoxically, then, nostalgia is positively related to both adverse and felicitous states. Growing evidence supports the homeostatic function of nostalgia, showing that nostalgia is triggered by threat directed at one's self-esteem (Wildschut et al., 2006), meaning in life (Routledge et al., 2011), social connectedness (Wildschut et al., 2006), or self-continuity (Sedikides, Wildschut, Routledge, & Arndt, 2015), and that nostalgia counteracts these threats by restoring self-positivity (Vess, Arndt, Routledge, Sedikides, & Wildschut, 2012; Wildschut et al., 2006), meaning in life (Routledge, Wildschut, Sedikides, Juhl, & Arndt, 2012; Sedikides & Wildschut, 2017), perceptions of social support (Zhou et al., 2008), and self-continuity (Sedikides et al., 2016; Sedikides, Wildschut, Routledge, & Arndt, 2015). Based on the homeostatic model, we would expect that threat appraisals, but not challenge appraisals, predict increased nostalgia. Threat appraisals are an adverse stimulus, whereas challenge appraisals are not. As such, threat appraisals would predict increased nostalgia (as a homeostatic corrective mechanism).

Challenge appraisals, because they do not disturb one's psychological equilibrium, would not trigger nostalgia.

Could nostalgia restore intrinsic motivation that is lowered due to threat appraisal? Previous research suggests, albeit indirectly, that nostalgia could augment intrinsic motivation. Compared to participants who recalled an ordinary event from their past, those who reflected on a nostalgic past event reported higher levels of approach motivation (Stephan et al., 2014), optimism (Cheung et al., 2013), inspiration (Stephan et al., 2015), and creativity (Van Tilburg, Sedikides, & Wildschut, 2015). In addition, inducing nostalgia (vs. control) strengthened motivation (i.e., galvanizes intentions) to pursue one's most important goals (Sedikides et al., 2018). Thus, nostalgia has motivational potency (Sedikides & Wildschut, 2016b).

To sum up, we wanted to know whether nostalgia (1) is positively associated with threat appraisal, but not challenge appraisal, and (2) attenuates the negative influence of threat appraisal on intrinsic motivation. That is, does nostalgia counteract a decline in intrinsic motivation? We hypothesized that students who construe the class in terms of threat would experience lower intrinsic motivation in a class, but also greater nostalgia. Nostalgia, in turn, would be related positively to intrinsic motivation and thereby counteract the negative influence of threat appraisals. This pattern of associations would give rise to a situation of statistical suppression.

1.3. General methodological considerations

We tested an intervening-variable model using correlational data. Notwithstanding their well-documented limitations (Bullock, Green, & Ha, 2010; Spencer, Zanna, & Fong, 2005), we regard these analyses as informative, because they placed our hypotheses at risk (Fiedler, Schott, & Meiser, 2011). For instance, failure to detect a positive indirect effect of threat appraisals on intrinsic motivation via increased nostalgia would cast doubt on the postulated regulatory role of nostalgia.

We propose that threat appraisals are positively associated with nostalgia. In addition, we propose that threat appraisals (negative) and nostalgia (positive) have opposite relations with intrinsic motivation. This configuration has been called reciprocal suppression (Conger, 1974) or cooperative suppression (Cohen & Cohen, 1975). When both predictors (threat appraisals and nostalgia) are included together in a regression equation predicting intrinsic motivation, reciprocal/cooperative suppression is demonstrated by an increase in the magnitude of both regression coefficients (MacKinnon, Krull, & Lockwood, 2000; Paulhus, Robins, Trzesniewski, & Tracy, 2004). This implies that statistical power to detect the partial associations (when predictors are included together) will be higher than statistical power to detect the zero-order associations. Accordingly, we used G*Power to calculate the required sample size to achieve statistical power of 0.80 to detect a zero-order correlation $r = 0.20$, assuming $\alpha = 0.05$ (two-tailed). The selected effect size approximates the magnitude of the average published effect in personality and social psychology ($r = 0.21$; Richard, Bond, & Stokes-Zoota, 2003). The power analysis suggested a required sample size of 193, which we exceeded. In our study, no manipulations or data exclusions were used (those < 18 years old were not included a priori due to university regulations), all variables analyzed are reported, and all data were collected before any analyses were conducted. Finally, when we refer to “direct effect” and “indirect effect,” we are adopting the parlance of intervening-variable models. We do not claim to demonstrate causal effects by using these terms.

2. Method

2.1. Participants

Participants were 382 (264 women, 118 men) students at a north-eastern university in the United States, ranging in age from 18 to

27 years ($M = 19.32$, $SD = 1.41$). Data collection was approved by the university's Institutional Review Board and all procedures were followed in accordance with guidelines on testing human participants. The students were enrolled in an introductory-level psychology class, which lasted 15 weeks. They completed all measures during questionnaire sessions in class or online at home.¹

2.2. Measures

2.2.1. Threat and challenge appraisal for class

We used two pairs of items developed by [McGregor and Elliot \(2002\)](#) to assess, respectively, threat appraisal (“I think this class represents a threat to me,” “I view this class as a threat”) and challenge appraisal (“I think this class represents a positive challenge to me,” “I view this class as a positive challenge”; see [Elliot & Reis, 2003](#), for predictive validity). Participants responded on a 1 (*strongly disagree*) to 7 (*strongly agree*) scale. We averaged item pairs to create threat and challenge appraisal indices. We report descriptive statistics and scale reliabilities for all measures in [Table 1](#).

2.2.2. Nostalgia

We used the [Batcho \(1995\)](#) Nostalgia Inventory, but modified it so that instructions referred to transient (rather than dispositional) nostalgia. After being presented with the Oxford Dictionary definition of nostalgia (“a sentimental longing or wistful affection for the past”), participants indicated how nostalgic they felt during the past few days about 18 aspects of their past (e.g., “my family,” “music,” “my pets,” “TV shows, movies,” “vacations I went to”). Participants responded on a 1 (*not at all nostalgic*) to 5 (*very nostalgic*) scale. We averaged their response to create a nostalgia index.

2.2.3. Intrinsic motivation

We used [Elliot and Harackiewicz's \(1996\)](#) Intrinsic Motivation Scale to assess intrinsic motivation for the class. The scale consists of eight items (e.g., “I think this class is interesting,” “I'm glad I took this class”; see [Elliot & Harackiewicz, 1996](#), for predictive validity). Participants responded on a 1 (*strongly disagree*) to 7 (*strongly agree*) scale. We averaged responses to form an intrinsic motivation index.

2.3. Procedure

In an in-class questionnaire session on the second day of class at the beginning of the semester, students indicated how nostalgic they felt during the past few days (T0 nostalgia: baseline). In a web questionnaire two months later, students indicated threat and challenge appraisals for the class (T1 threat appraisal and T1 challenge appraisal). Approximately one month later, toward the end of the semester, students indicated on a web questionnaire how nostalgic they felt during the past few days (T2 nostalgia) as well as their intrinsic motivation for the class (T2 intrinsic motivation).

3. Results

3.1. Threat appraisals

We report zero-order correlations among variables in [Table 1](#). Results revealed that (a) T1 threat appraisals were negatively associated with T2 intrinsic motivation, (b) T1 threat appraisals were positively associated with T2 nostalgia, and (c) T2 nostalgia was positively associated with T2 intrinsic motivation. Furthermore, a regression analysis showed that the positive association between T1 threat appraisals and

¹ We collected the data as a part of a multi-study project ([Elliot, Jury, & Murayama, 2017, Study 1a](#); [Elliot, Murayama, Kobeisy, & Lichtenfeld, 2015, Study 1](#)). The findings reported herein are not reported in any prior publication.

Table 1
Descriptive statistics, scale reliabilities, and correlations.

Variable	<i>M</i> (<i>SD</i>)	α	1	2	3	4
Beginning of the semester						
1. T0 nostalgia (1–5)	2.77 (0.69)	0.73	–			
Middle of the semester						
2. T1 threat appraisal for class (1–7)	2.20 (1.30)	0.90	0.12*	–		
3. T1 challenge appraisal for class (1–7)	4.41 (1.53)	0.96	0.16**	–0.06	–	
End of the semester						
4. T2 nostalgia (1–5)	2.89 (0.78)	0.86	0.63**	0.19**	0.10*	–
5. T2 intrinsic motivation for class (1–7)	5.02 (1.29)	0.94	0.12*	–0.14**	0.58**	0.10*

* $p < 0.05$.

** $p < 0.01$ (one-tailed).

T2 nostalgia remained significant when we controlled for baseline (T0) nostalgia ([Table 2](#), Model 2). In other words, threat appraisals predicted change over time in nostalgia. The results are consistent with the possibility that, whereas the direct effect of threat appraisals is to decrease intrinsic motivation, the indirect effect of threat appraisals is to increase intrinsic motivation via nostalgia. This entails that threat appraisals should more strongly predict reductions in intrinsic motivation after nostalgia has been statistically controlled ([Paulhus et al., 2004](#)). That is, the presence of an indirect effect implies a change in the direct effect when the intervening variable is included ([MacKinnon et al., 2000](#)).²

To test the proposed intervening-variable model, we used [Hayes's \(2013\)](#) PROCESS macro (Model 4). More precisely, we tested the indirect effect of threat appraisal on intrinsic motivation via nostalgia ([Fig. 1](#)). We entered T1 threat appraisal as the predictor variable, T2 nostalgia as the intervening variable, and T2 intrinsic motivation as the outcome variable. We entered baseline (T0) nostalgia as a covariate in the model of the intervening variable (T2 nostalgia), so that the intervening variable represented change over time in nostalgia. The indirect effect of nostalgia (denoted as ab) was significant, $ab = 0.01$, 95% CI [0.00; 0.04]. Thus, results revealed the hypothesized pattern of statistical suppression, whereby the direct negative effect of T1 threat appraisals on T2 intrinsic motivation was counteracted by a positive indirect effect via increased T2 nostalgia. When we controlled for T2 nostalgia, the direct negative effect of T1 threat appraisals on T2 intrinsic motivation was strengthened (from -0.14 to -0.17 ; compare Models 3 and 4 in [Table 2](#)).

Additionally, we tested an alternative sequence of the same variables by reversing the order of the mediator (T2 nostalgia) and the outcome (T2 intrinsic motivation). The indirect effect of T1 threat appraisals on T2 nostalgia via T2 intrinsic motivation was not significant, $ab = -0.00$, 95% CI [-0.01 ; 0.00]. Thus, the data are inconsistent with an alternative model in which the relation between threat appraisals and nostalgia is mediated by intrinsic motivation.

3.2. Challenge appraisals

Next, we examined zero-order correlations for challenge appraisals ([Table 1](#)). These showed that (a) T1 challenge appraisals were prognostic of higher T2 intrinsic motivation and (b) T1 challenge appraisals were associated with higher T2 nostalgia. As noted above, T2 nostalgia was positively associated with T2 intrinsic motivation. When we

² [MacKinnon et al. \(2000\)](#) noted that “suppression, mediation, and confounding effects can be estimated by the difference between regression coefficients $\tau - \tau'$, which is also equal to $\alpha\beta$.” This is the difference between the direct effect before (τ) and after (τ') inclusion of the intervening variable is equivalent to the test of the indirect effect ($\alpha\beta$).

Table 2
Multiple regression analyses: threat appraisals.

	Outcome: T2 nostalgia				Outcome: T2 intrinsic motivation			
	Model 1		Model 2		Model 3		Model 4	
	β	$t(368)$	β	$t(366)$	β	$t(368)$	β	$t(367)$
T0 nostalgia			0.62	15.28***				
T1 threat appraisal for class	0.19	3.69***	0.11	2.73**	-0.14	-2.78**	-0.17	-3.22**
T2 nostalgia							0.13	2.47*

* $p < 0.05$.
 ** $p < 0.01$.
 *** $p < 0.001$.

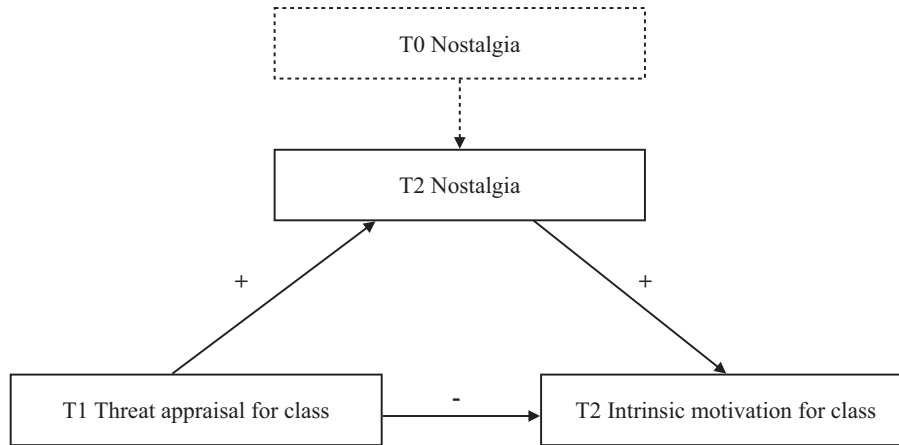


Fig. 1. Illustration of the tested regulatory model. The negative direct effect of threat appraisals on intrinsic motivation is counteracted by a positive indirect effect via nostalgia.

Table 3
Multiple regression analyses: challenge appraisals.

	Outcome: T2 nostalgia				Outcome: T2 intrinsic motivation			
	Model 1		Model 2		Model 3		Model 4	
	β	$t(368)$	β	$t(366)$	β	$t(368)^*$	β	$t(367)^{**}$
T0 nostalgia			0.63	15.40***				
T1 challenge appraisal for class	0.10	1.84	-0.004	-0.09	0.58	13.64***	0.57	13.29***
T2 nostalgia							0.04	0.99

* $p < 0.05$.
 ** $p < 0.01$.
 *** $p < 0.001$.

controlled for T0 nostalgia in a regression analysis, the relation between T1 challenge appraisals and T2 nostalgia was no longer significant (Table 3, Model 2). Thus, challenge appraisals did not predict change over time in nostalgia. This latter finding seems to rule out the possibility that nostalgia mediates the positive link between challenge appraisals and intrinsic motivation. To verify this, we used the PROCESS macro (Hayes, 2013; Model 4) in testing the indirect effect of challenge appraisal on intrinsic motivation via nostalgia. We entered T1 challenge appraisal as the predictor variable, T2 nostalgia as the intervening variable, and T2 intrinsic motivation as the outcome variable. We again entered baseline (T0) nostalgia as a covariate in the model of the intervening variable (T2 nostalgia). As expected, the indirect effect of challenge appraisals on intrinsic motivation via increased nostalgia was not significant, $ab = -0.01$, 95% CI [-0.01; 0.00].³

4. Discussion

Our findings offer first evidence for the regulatory function of nostalgia in an educational context. Students who construed their class as a threat, reported lower intrinsic motivation for the class one month later. However, threat appraisals also predicted increased nostalgia over time. Nostalgia, in turn, was associated with higher intrinsic motivation. In other words, consistent with nostalgia's hypothesized regulatory role, this emotion counteracted or offset the negative association between threat appraisals and intrinsic motivation. Our findings make a novel contribution to the literature showing that nostalgia might function as a resource for coping with adversities that students encounter in pursuit of their educational goals.

Our results revealed small positive correlations of T1 challenge appraisals with both T0 and T2 nostalgia. Regression analyses showed, however, that the association between T1 challenge appraisals and T2 nostalgia was eliminated when we controlled for T0 nostalgia. In other

³ Controlling for gender did not alter the pattern of results of any model.

words, there was no evidence that challenge appraisals predicted change over time in nostalgia. This finding is consistent with our prediction that challenge appraisals should not trigger nostalgia. How, then, to explain the positive zero-order correlation between challenge appraisals and nostalgia? One possibility is that this correlation is spurious and can be attributed to a “third variable.” Another possibility is that nostalgia facilitates challenge appraisals. This second alternative is consistent with evidence that (a) nostalgia increases approach motivation (Sedikides & Wildschut, 2016b; Stephan et al., 2014) and (b) challenge appraisals reflect approach motivation (Elliot & Harackiewicz, 1996). Testing nostalgia's capacity to promote challenge appraisal in academic context is an important direction for future research.

4.1. Limitations and future research directions

We examined nostalgia's regulatory role by testing an intervening-variable model with correlational data. The pitfalls of this approach are well-documented (Bullock et al., 2010). Nevertheless, we regard the analyses as informative, because they placed the hypothesized model (Fig. 1) at risk (Fiedler et al., 2011). That is, the postulated causal chain comprised two links (threat appraisals \Rightarrow nostalgia \Rightarrow intrinsic motivation). Failure of either link would have undermined the model, but each link held. Additionally, we used a baseline measure of nostalgia to bolster the proposed causal sequence and we demonstrated that threat appraisal predicted nostalgia even when controlled for the prior baseline level of nostalgia (i.e., threat appraisals predicted increases in nostalgia over time). To disambiguate the order of nostalgia and intrinsic motivation, we tested an alternative model, in which intrinsic motivation preceded nostalgia. Results for this alternative model revealed that the indirect effect of threat appraisals on nostalgia via intrinsic motivation was not significant. To address fully the inherent limitations of correlational data, future research should incorporate experimental-causal-chain designs (Spencer et al., 2005). Here, a researcher would manipulate threat appraisals to examine the causal effect on nostalgia, and would then manipulate nostalgia to test its beneficial impact on intrinsic motivation.

Future empirical efforts would also do well to examine nostalgia's ability to counteract broader threats in educational contexts. For example, performance-avoidance achievement goals decrease energy in class, exam performance, and intrinsic motivation (Elliot, Murayama, & Pekrun, 2011) and are often grounded in fear of failure, low self-determination, and entity theory (Elliot & McGregor, 2001). Nostalgia could facilitate a shift away from these avoidance goals and toward approach (performance and mastery) goals in educational contexts (Sedikides & Wildschut, 2016b; Sedikides, Wildschut, & Stephan, 2018). In that sense, nostalgia for past academic activities and outcomes could be construed as a positive retrospective emotion in Pekrun, Elliot, and Maier's (2006, Table 1) taxonomy of achievement emotions. Indeed, there is a close resemblance between nostalgia and pride—a prototypical positive retrospective achievement emotion (Van Tilburg et al., 2017).

Regarding the potential practical implications for education, it would be worthwhile to examine moderators of the nostalgia-intrinsic motivation link. Future research could address if academically-focused nostalgia (e.g., the good old elementary school days) would have a stronger positive influence on motivation than nostalgia for non-academic experiences. Furthermore, it would be interesting to explore if nostalgia might undermine academic achievements for some students—for example, those characterized by low self-efficacy or low value appraisals (control-value theory; Pekrun, 2006)—by distracting them from learning. It is also important to verify whether nostalgia would be effective for other school subjects, since taking a psychology class might be related to different threats than, for instance, taking a mathematics class. Finally, future research could also examine which particular coping skills and strategies are enhanced by nostalgia (Batcho, 2013a)

and if nostalgia improves actual academic performance. With this knowledge, nostalgia, with its potential to raise self-positivity, life meaning, or social connectedness, might be used in interventions aimed at helping students who experience academic difficulties.

4.2. Coda

Nostalgia counteracted the negative relation between threat appraisal and intrinsic motivation among undergraduate students. These findings promise to open up an entire new field of inquiry on the regulatory function of nostalgia in educational settings.

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