

Research article

Nostalgia counteracts self-discontinuity and restores self-continuity

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Abstract

Nostalgia is a resource that functions, in part, as a response to self-discontinuity and a source of self-continuity. We tested and supported this regulatory role of nostalgia in the tradition of establishing a causal chain. In Study 1, we examined the naturalistic association between events precipitating self-discontinuity and nostalgia. Self-discontinuity, especially when stemming from negative life events, was associated with higher proneness to nostalgia. In Study 2, we experimentally induced negative self-discontinuity (i.e. relatively disruptive), positive self-discontinuity (i.e. relatively non-disruptive) or self-continuity (i.e. neutral non-disruptiveness) and subsequently assessed state levels of nostalgia. Only negative self-discontinuity evoked heightened nostalgia. In Study 3, we experimentally induced nostalgia (versus ordinary autobiographical recollection) and assessed self-continuity. Nostalgia augmented self-continuity. In Study 4, we experimentally induced nostalgia (versus ordinary autobiographical recollection versus positive autobiographical recollection) and assessed self-continuity. Again, nostalgia augmented self-continuity and did so above and beyond positive affect. Here, we ruled out demand characteristics as a rival hypothesis. Taken together, the findings clarify the role of nostalgia in the dynamic between self-discontinuity and self-continuity and elucidate the restorative properties of nostalgia for the self-system. Copyright © 2014 John Wiley & Sons, Ltd.

Don't let the past remind us of what we are not now.
— Stephen Stills, 1969

In the classic song, *Suite: Judy Blue Eyes*, Stephen Stills advises his then lover Judy Collins to avoid a disconnect between their past and present. Research supports the wisdom of this advice. Self-discontinuity, a sense of disjointedness between one's past and present self (Davis, 1979; Parfit, 1971), is positively related to negative affect and anxiety (Milligan, 2003), ineffective coping following life transitions such as job loss (Sadeh & Karniol, 2012), and even suicide (Chandler & Proulx, 2008). On the other hand, self-continuity, a sense of connection between one's past and one's present (Parfit, 1971; Vignoles, 2011), is positively related to psychological well-being (McAdams, Reynolds, Lewis, Patten, & Bowman, 2001), psychological equanimity (Landau, Greenberg, & Solomon, 2008), and even physical health (Anderzén & Arnetz, 1999).

With increasing evidence for the liabilities of self-discontinuity and benefits of self-continuity, it becomes important to understand the psychological processes that counter the former and generate the latter. Do people follow the advice of Stephen Stills, perhaps using nostalgia ('a sentimental longing or wistful affection for the past,' *The New Oxford Dictionary of English*, 1998, p. 1266) to defy self-discontinuity and raise self-continuity? We examine this idea—that nostalgia is a response to self-discontinuity and a source of self-continuity—

in the present article. We assess the regulatory role of nostalgia in two steps. First, we examine whether self-discontinuity is positively related to dispositional nostalgia (i.e. nostalgia proneness) and if it does trigger state nostalgia; that is, if nostalgia is a response to self-discontinuity. Second, we examine whether experimentally induced nostalgia elicits relatively high level of state self-continuity; that is, whether nostalgia fosters self-continuity. We test these two steps of our model separately in the tradition of establishing a causal chain (Spencer, Zanna, & Fong, 2005).

NOSTALGIA

Nostalgia is a prevalent emotion. Amidst anecdotal reports that nostalgia is experienced virtually by everyone (Boym, 2001), research has ascertained that the majority of undergraduate students (Wildschut, Sedikides, Arndt, & Routledge, 2006) and community members regardless of age (Hepper, Robertson, Wildschut, Sedikides, & Routledge, 2014) experience nostalgia at least once a week and modally three times a week. Also, nostalgia is conceptualised and experienced similarly across cultures (Hepper, Wildschut, et al., 2014). Nostalgic narratives comprise predominantly fond, personally meaningful and rosy memories of childhood or close relationships, as well as

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keepsakes and familiar sensory cues (e.g. music and smells; Hepper, Ritchie, Sedikides, & Wildschut, 2012; Reid, Green, Wildschut, & Sedikides, 2014). Such nostalgic accounts feature the self as the protagonist, entail a blend of cognition and affect and are bittersweet albeit considerably more sweet (i.e. positive or joyful) than bitter (i.e. negative or sad; Abeyta, Routledge, Sedikides, & Wildschut, 2014; Batcho, 1998; Hepper et al., 2012; Wildschut et al., 2006).

More important, nostalgia is a social emotion (Holak & Havlena, 1992; Sedikides, Wildschut, Arndt, & Routledge, 2006, 2008; Sedikides, Wildschut, Routledge, Arndt, & Zhou, 2009). Nostalgia represents the human ability to draw strength and motivation from memories of close others (Hepper et al., 2012; Vess, Arndt, Routledge, Sedikides, & Wildschut, 2012; Zauberman, Ratner, & Kim, 2009). The sociality of nostalgia is reflected in its capacity to promote perceptions of friendship and social support, nurture sentiments of protection and love, lower attachment avoidance and attachment anxiety, engender a sense of interpersonal competence, prompt prosocial behaviour (e.g. higher intentions to volunteer and donate to charity, higher charitable donations and helping) and improve attitudes towards outgroups as well as strengthen the desire for intergroup contact (Juhl, Sand, & Routledge, 2012; Seehusen et al., 2013; Stephan et al., 2014; Turner, Wildschut, & Sedikides, 2012; Turner, Wildschut, Sedikides, & Gheorghiu, 2013; Wildschut et al., 2006; Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010; Zhou, Sedikides, Wildschut, & Gao, 2008; Zhou, Wildschut, Sedikides, Shi, & Feng, 2012).

THE REGULATORY ROLE OF NOSTALGIA

We proceed with a discussion of the putative regulatory role of nostalgia in the dynamic between self-discontinuity and self-continuity.

Nostalgia Counters Self-Discontinuity

Nostalgia is a resource that can be accessed in times of psychological aversiveness and discomfort (Van Tilburg, Igou, & Sedikides, 2013; Wildschut et al., 2006; Zhou et al., 2008 for a review, see Sedikides et al., in press). Self-discontinuity is an aversive, discomforting state (Chandler & Proulx, 2008; Milligan, 2003; Sadeh & Karniol, 2012). But what is the relation between self-discontinuity and nostalgia? Is self-discontinuity associated positively with nostalgia, and, more relevant, does it trigger nostalgia?

Davis (1979) offered affirmative answers to both questions. Individuals, he argued, may experience a contrast between their past and present self. Such a contrast can be initiated or exacerbated by various life vicissitudes (e.g. layoffs, health deterioration, relationship break-up and death of a loved one). A contrast or self-discontinuity involves 'fears, discontents, anxieties, or uncertainties' (p. 34). Nostalgia, Davis speculated, counters those psychological ills by 'encouraging an appreciative stance towards former selves; excluding unpleasant memories; reinterpreting "marginal, fugitive, and eccentric facets of earlier selves" in a positive light; and establishing benchmarks of one's biography' (pp. 35–36). Thus, Davis

posits that individuals may recruit nostalgia when faced with a dissociation between past and present.

The idea that nostalgia counteracts self-discontinuity has been put to test by several authors, who nonetheless produced inconclusive or weak findings for a review, see Sedikides, Wildschut, Gaertner, Routledge, & Arndt, 2008). Best and Nelson (1985) proposed that individuals who experience greater self-discontinuity will report higher nostalgia; that is, they will rate the past more favourably. These researchers re-analysed US national survey data from 1968, 1974, 1976 and 1980. The surveys included four indicators of life circumstances that often elicit self-discontinuity and several nostalgia items, some of which were arguably high (e.g. 'people had it better in the old days') and some of which were low (e.g. 'I am as happy as when I was younger') on face validity. The researchers formed a nostalgia composite by averaging the pertinent items. One indicator of self-discontinuity (i.e. 'deteriorating life circumstances such as divorce and health problems') was associated with increased nostalgia, but the other three indicators (e.g. 'work interruption') were not. The mixed findings may be due to conceptual and methodological problems (e.g. poor operationalisation of nostalgia and/or discontinuity) as well as data analytic issues (e.g. under-analysis). In a qualitative investigation involving participant observation and interview, Milligan (2003) reported that employees often engaged in nostalgia to readjust to new work environments. In another qualitative investigation involving case studies, Goodson, Moore and Hargreaves (2006) reported that teachers sometimes resorted to nostalgia in the face of unwanted organisational change.

Nostalgia Fosters Self-Continuity

Nostalgic recollections link more effectively the past with the present than ordinary or positive recollections. Stephan, Sedikides and Wildschut (2012) demonstrated this point in two experiments. Following the induction of nostalgia (versus controls), these authors had the corresponding nostalgic and ordinary autobiographical narratives coded on abstractness versus concreteness via the Linguistic Category Model (Coenen, Hedebouw, & Semin, 2006) and Linguistic Inquiry and Word Count (Pennebaker, Booth, & Francis, 2007). In Linguistic Category Model, higher level of abstraction is indicated by four categories: adjectives (i.e. inferred psychological attribute qualifying a person), state verbs (i.e. inferred enduring cognitive or emotional states), interpretive action verbs (i.e. inferred actions with a clear beginning and an end) and descriptive action verbs (i.e. directly observable actions). In Linguistic Inquiry and Word Count, higher level of abstraction is indicated by words related to causation or insight. The results of Experiment 1 showed that nostalgic (relative to ordinary) recollections contained more abstract terms and concrete terms. Importantly, concrete terms highlighted the relevance of the nostalgic event for one's present. For example, concrete terms comprised an action or a state in the present sparked by a past event (e.g. 'When I look at my family photo on my desk, I smile'). Similarly, the results of Experiment 2 showed that nostalgic (relative to ordinary or positive) recollections entailed more abstract construal and also more concrete construal that linked the past with the present.

More directly, Davis (1979) speculated that nostalgia combats self-discontinuity ‘by marshaling our psychological resources for continuity’ (p. 34). There is growing appreciation for nostalgia’s restorative capacity (Routledge, Sedikides, Wildschut, & Juhl, 2013; Wildschut, Sedikides, & Cordaro, 2011). For example, nostalgia offsets loneliness through perceptions of social support (Zhou et al., 2008), thwarts boredom by replenishing lost meaning in life (Van Tilburg et al., 2013) and alleviates self-threat by increasing self-positivity (Vess et al., 2012). Yet, evidence for the palliative potential of nostalgia notwithstanding, the hypothesis that nostalgia nurtures self-continuity has not been directly evaluated.

OVERVIEW

We set to test a model, according to which nostalgia rises in response to self-discontinuity, and nostalgia elevates self-continuity. We evaluate the hypothesis that self-discontinuity is positively related to and triggers nostalgia in two studies, using converging operationalisations of the key constructs (Campbell & Fiske, 1959). In Study 1 (a UK community survey), we examine whether nostalgia naturalistically and positively covaries with life events that typically precipitate self-discontinuity. In Study 2 (a laboratory experiment with UK university students), we examine whether state nostalgia is heightened in response to induced negative self-discontinuity (but not positive self-discontinuity or self-continuity). We proceed to evaluate the hypothesis that nostalgia fosters self-continuity in two studies, also using convergent operations. In Study 3 (a laboratory experiment with US university students), we examine whether induced nostalgia (versus ordinary autobiographical recollection) elevates state self-continuity, while empirically clarifying this latter construct. In Study 4 (a laboratory experiment involving UK university students), we examine whether nostalgia (versus ordinary autobiographical

recollection versus positive autobiographical recollection) elevates self-continuity above and beyond positive affect (PA). Here, we also test demand characteristics as a rival hypothesis. Note that, across studies, we tested all participants who responded within the designated study period. We did so under the stipulation that the number of observations per condition ($n_{\text{condition}}$) should be equal to or greater than 20 (Simmons, Nelson, & Simonsohn, 2011).

STUDY 1: DOES SELF-DISCONTINUITY ENTAIL HIGHER NOSTALGIA? A UK COMMUNITY SURVEY

In Study 1, we operationalised self-discontinuity in terms of social readjustment. We focused on the naturalistic association between events that typically precipitate self-discontinuity and nostalgia.

Method

Participants

Participants were a community sample of 61 adult Southampton volunteers (40 women, 21 men). Their ages ranged from 34–61 years ($M=48.77$, $SD=6.38$).

Materials and Procedure

Participants completed a booklet containing an abbreviated version of the Social Readjustment Rating Scale (SRRS; Holmes & Rahe, 1967). The SRRS, our self-discontinuity measure, comprises 43 life events that represent discontinuity; they are ‘change events, that is events that precipitate movement from one equilibrium or steady state to another’ (Holmes & Rahe, 1967, p. 216). Weights are attached to the SRRS events according to their relative impact or severity, with the

Table 1. Social Readjustment Rating Scale events: weights, means, standard deviations and correlations with nostalgia proneness (Southampton Nostalgia Scale) in Study 1

SRRS event	Weights			Association with nostalgia	
	Holmes and Rahe (1967)	Scully et al. (2000)	M (SD)	r_{pb}	95% CI (r_{pb})
Divorce	73	58	0.07 (0.26)	.06	−0.20, 0.30
Death of a close family member	63	45	0.36 (0.48)	.21*	−0.04, 0.44
Change in health of family member	44	46	0.39 (0.49)	.04	−0.21, 0.29
Gain of a new family member	39	21	0.15 (0.36)	−.05	−0.30, 0.20
Change in financial situation	38	43	0.59 (0.49)	.07	−0.18, 0.34
Death of a close friend	37	35	0.11 (0.31)	.15	−0.11, 0.38
Outstanding personal achievement	28	23	0.21 (0.41)	−.09	−0.34, 0.16
Change in living conditions	25	26	0.31 (0.46)	.27**	0.02, 0.49
Change in residence	20	19	0.25 (0.43)	.28**	0.03, 0.50
Taking on a loan	17	12	0.23 (0.42)	.18	−0.07, 0.42
Change in sleeping habits	16	17	0.26 (0.44)	.30**	0.05, 0.51
Change in eating habits	15	13	0.25 (0.43)	.36***	0.12, 0.56

Note. We listed SRRS events in descending order by Holmes and Rahe (1967) weight. Because events were assessed on a dichotomous scale (0 = no, 1 = yes), tabled means reflect the proportion of participants who experienced the event. We calculated standard deviations (SD) using the formula \sqrt{pq} , where p is the proportion of participants who experienced the event and q equals $1 - p$. We calculated point biserial correlations (r_{pb}) to test the association of each event with nostalgia proneness.

SRRS, Social Readjustment Rating Scale.

$N=61$.

* $p < .10$;

** $p < .05$;

*** $p < .01$.

most severe event ('death of a spouse') receiving a weight of 100. As stated earlier, we used an abbreviated version of the SRRS comprising 12 life events that we expected to occur in our sample with some regularity. These events ranged from high ('divorce') to low ('change in eating habits') severity. We list the events in Table 1, along with their original Holmes and Rahe (1967) weights and updated weights established by Scully, Tosi and Banning (2000). Given that recent events are more salient than are events accumulated over the entire lifespan (Scully et al.), we instructed participants to indicate, for each event, whether it had occurred over the past 2 years (0 = *no*, 1 = *yes*). Note that the events are not necessarily related, and there is no strong expectation that a person who experiences one event will also experience other events. The criterion of internal consistency is therefore inapplicable (Cleary, 1981), but there is extensive evidence for the construct validity of the SRRS (Kessler, Price, & Wortman, 1985).

Participants also completed a measure of dispositional nostalgia, the Southampton Nostalgia Scale (SNS; Routledge, Arndt, Sedikides, & Wildschut, 2008). The SNS consists of five items assessing proneness to nostalgia (e.g. 'How often do you experience nostalgia?'; 1 = *very rarely*, 7 = *very frequently*). We averaged the items to create an overall nostalgia proneness score (Cronbach's $\alpha = .96$, $M = 4.24$, $SD = 1.45$). Prior research has shown that the SNS is significantly correlated with other measures of nostalgia proneness in Western (Routledge et al., 2008) and East-Asian (Zhou et al., 2008) samples.

Results and Discussion

The unweighted sum of SRRS events ($M = 3.18$, $SD = 2.00$) was significantly correlated with nostalgia proneness ($r[61] = .39$, 95% CI = 0.15, 0.58, $p = .002$). This correlation was significant for women ($r[40] = .37$, 95% CI = 0.07, 0.61, $p = .017$) and men ($r[21] = .47$, 95% CI = 0.05, .75, $p = .031$) and remained significant when controlling for participant age ($r[61] = .34$, 95% CI = 0.09, 0.54, $p = .008$). Furthermore, this correlation remained significant when life events were weighted according to the Holmes and Rahe (1967) weights ($r[61] = .32$, 95% CI = 0.08, .53, $p = .011$) and the Scully et al. (2000) weights ($r[61] = .33$, 95% CI = 0.08, 0.53, $p = .010$).

Next, we tested the point biserial correlations of nostalgia proneness with each SRRS event (Table 1). 'Change in living conditions', 'change in residence', 'change in sleeping habits' and 'change in eating habits' were significantly correlated with nostalgia at an alpha level of .05. These findings suggest that geographical mobility or relocation (a discomfiting event; Deane, 1990; Magdol, 2000; Moyle & Parkes, 1999), in particular, is a potent predictor of nostalgia (see also Oishi, Miao, Koo, Kislning, & Ratliff, 2010).

In all, 10 out of 12 individual point biserial correlations were positive (sign test $p = .019$). The two negative correlations were for 'gain of a new family member' and 'outstanding personal achievement'. These exceptions to the pattern of positive correlations suggest tentatively that, although self-discontinuity is associated with increased nostalgia, this does not apply when self-discontinuity stems from positive life events. Correcting for some of the

methodological problems that plagued Best and Nelson's (1985) research, Study 1 obtained preliminary support for Davis (1979) theorising.

STUDY 2: DOES SELF-DISCONTINUITY TRIGGER NOSTALGIA? A UK LABORATORY EXPERIMENT

The Study 1 findings, albeit informative, were correlational and relied on assumptions that life events would elicit self-discontinuity. In Study 2, we examined directly the effect of self-discontinuity on nostalgia. In particular, we tested experimentally the idea that nostalgia would constitute a response to negative self-discontinuity, but not to positive self-discontinuity or to self-continuity.

Method

Participants and Design

Participants were 88 University of Southampton undergraduate volunteers (73 women, 15 men). Their ages ranged from 18 to 22 years ($M = 19.72$, $SD = 0.92$). We randomly assigned participants to the three experimental conditions: negative self-discontinuity, positive self-discontinuity and self-continuity. Preliminary analyses revealed that gender did not qualify the statistically significant findings reported in the succeeding text. We therefore omitted gender from the reported analyses.

Procedure and Materials

Participants were seated at desks and completed the materials, presented in a single printed booklet, at their own pace. The experimental manipulation involved having participants read essays, which, based on an ostensible literature review, described the consequences of transition to, and studying at, university.

In the *negative-self-discontinuity* condition, participants read:

... This comprehensive review of the psychological literature confirmed the widely shared view that the university years are a time of personal transformation during which individuals become cut off from their family environment and circle of friends, are confronted with new (often times overwhelming) challenges, and question their values, their goals, and their beliefs about themselves.

In the *positive-self-discontinuity* condition, participants read:

... This comprehensive review of the psychological literature confirmed the widely shared view that the university years are a time of personal transformation during which individuals become more independent, explore new opportunities, and strengthen their values, their goals, and their beliefs about themselves.

In the *self-continuity* condition, participants read:

... This comprehensive review of the psychological literature confirmed the widely shared view that the university years are a time of stability during which individuals perform a clearly specified role as student, are surrounded by a stable group of friends in a familiar surrounding, and study the same subject matter for a number of years.

Next, participants completed a manipulation check by responding to the statement: 'The University years are a time of change' (1 = *disagree strongly*, 5 = *agree strongly*). We operationalised discontinuity in terms of 'change' (as in Study 1). Using the term 'discontinuity' instead of 'change' might have risked demand characteristics. In addition, we doubted many of our undergraduates would be familiar with 'discontinuity', as it is not a common lay term; our student population, though, was highly familiar with the term 'change'. Finally, participants completed a validated state nostalgia scale, the Nostalgia Inventory (NI; Batcho, 1995). In particular, they rated the extent to which they missed 18 aspects of their past 'at this moment' (1 = *not at all*, 5 = *very much*; Cronbach's $\alpha = .87$, $M = 2.57$, $SD = 0.70$).

Results and Discussion

Manipulation Check

An Analysis of Variance (ANOVA) on the manipulation check item yielded a condition main effect, $F(2, 85) = 4.15$, $p = .019$, $\eta^2 = 0.09$. Years at university were more likely to be endorsed as a time of change in the pooled negative self-discontinuity ($M = 4.47$, $SD = 0.68$) and positive self-discontinuity ($M = 4.63$, $SD = 0.49$) conditions than in the self-continuity condition ($M = 4.13$, $SD = 0.81$), $F(1, 85) = 7.63$, $p = .007$, $\eta^2 = 0.08$. The negative self-discontinuity and positive self-discontinuity conditions did not differ significantly, $F(1, 85) = 0.82$, $p = .37$, $\eta^2 = 0.009$. We conducted two supplementary tests in an effort to clarify the findings. Relative to the self-continuity condition, years at university were more likely to be endorsed as time of change in the positive self-discontinuity ($F[1, 85] = 7.83$, $p = .006$, $\eta^2 = 0.08$) and (marginally) negative self-discontinuity ($F[1, 85] = 3.76$, $p = .056$, $\eta^2 = 0.04$) conditions. Taken together, these analyses show that, as intended, (i) negative and/or positive self-discontinuity participants perceived more change in their life than their self-discontinuity counterparts and (ii) negative and positive self-discontinuity participants perceived equivalent levels of change in their life.

State Nostalgia

An ANOVA on the NI produced a condition main effect, $F(2, 85) = 4.60$, $p = .013$, $\eta^2 = 0.10$. Participants in the negative self-discontinuity condition ($M = 2.86$, $SD = 0.62$) reported being more nostalgic than did participants in the pooled positive self-discontinuity ($M = 2.35$, $SD = 0.64$) and self-continuity ($M = 2.49$, $SD = 0.74$) conditions, $F(1, 85) = 8.74$, $p = .004$, $\eta^2 = 0.09$. The latter two conditions did not differ significantly, $F(1, 85) = 0.64$, $p = .42$, $\eta^2 = 0.007$. Supplementary comparisons of the negative self-discontinuity condition to the positive self-discontinuity ($F[1, 85] = 8.45$, $p = .005$, $\eta^2 = 0.09$) and self-continuity ($F[1, 85] = 4.77$, $p = .032$, $\eta^2 = 0.05$) conditions were also significant. The results are consistent with the proposal that negative self-discontinuity (but not positive self-discontinuity or self-continuity) elicits nostalgia (Davis, 1979).

STUDY 3: DOES NOSTALGIA ELICIT SELF-CONTINUITY? EXPERIMENTAL EVIDENCE FROM THE USA

In Studies 1 and 2, we tested and supported the first component of our regulatory model: Self-discontinuity is positively related to and triggers nostalgia. But does nostalgia engender higher self-continuity? We hypothesised that it does, in accord with Davis' (1979) intuition that nostalgia 'marshal[s] our psychological resources for continuity' (p. 34) and with accumulating evidence for the restorative capacity of nostalgia (Routledge, Wildschut, Sedikides and Juhl, 2013; Wildschut et al., 2011). We asked, in Study 3, whether nostalgia leads to self-continuity in a sample of US undergraduates.

In Study 3, we also set out to clarify the meaning and assessment of the construct 'self-continuity'. We assumed that this construct refers to relatively concrete perceptions of continuity between one's personal past and present. To that effect, we generated (on the basis of a literature review and collegial feedback) four *personal-continuity* items: 'I feel connected with my past', 'I feel connected with who I was in the past', 'There is continuity in my life' and 'Important aspects of my personality remain the same across time'. However, we also recognise that self-discontinuity may refer to relatively abstract judgments regarding the relation between past and present. To that effect, we generated (again on the basis of literature review and colleague consensus) the following four *temporal-continuity* items: 'The past and present flow seamlessly together', 'The present is a mere continuation of the past', 'There is continuity between the past and present' and 'The past merges nicely into the present'. After probing the factor structure of the eight continuity items through EFA, we considered the possibility that nostalgia might impact more strongly on personal continuity than temporal continuity.

Method

Participants and Design

Participants were 127 US undergraduates from University of Missouri—Columbia (65 men, 62 women). They ranged in age from 17 to 41 years ($M = 18.95$, $SD = 2.16$). We assigned participants randomly to nostalgia and control conditions. We omitted gender from the reported results, as preliminary analyses indicated that this variable did not qualify the statistically significant findings in the succeeding text. Degrees of freedom vary occasionally because of missing values.

Procedure and Materials

In the nostalgia condition, participants were instructed to '... bring to mind a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic'. In the control condition, participants were instructed to '... bring to mind an ordinary event in your life'. Participants in both conditions listed four keywords relevant to the event and took a few moments to think about the event and how it made them feel. They then provided a brief written account of the experience. Next, participants completed a three-item

nostalgia manipulation check (1 = *strongly disagree*, 6 = *strongly agree*): 'Right now, I am feeling quite nostalgic', 'Right now, I am having nostalgic feelings' and 'I feel nostalgic at the moment' ($\alpha = .91$, $M = 3.55$, $SD = 1.38$). Both the nostalgia induction and manipulation check have been validated by prior research in the USA (Juhl et al., 2010; Routledge et al., 2008; Routledge et al., 2011; Routledge, Wildschut, Sedikides, Juhl, & Arndt, 2012; Vess et al., 2012), the UK (Hepper et al., 2012; Stephan et al., 2012; Wildschut et al., 2006, 2010), Ireland (Van Tilburg et al., 2013) and China (Zhou et al., 2008, 2012).

Self-Continuity

Participants responded to the eight personal-continuity and temporal-continuity items (Table 2), using a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*).

Results and Discussion

Manipulation Check

As intended, participants in the nostalgia condition ($M = 4.02$, $SD = 1.29$) reported being more nostalgic than those in the control condition ($M = 3.08$, $SD = 1.31$), $F(1, 122) = 16.12$, $p < .001$, $\eta^2 = 0.12$.

Factor Analysis of Self-Continuity Items

We conducted an EFA of the eight self-continuity items, using maximum likelihood estimation. The ratio of observations to items (~16:1) is adequate for exploratory factor analysis (EFA) (Gorsuch, 1983; Nunnally & Bernstein, 1994). There were two factors with an eigenvalue greater than 1, and a scree plot also supported the extraction of two factors. We present factor loadings in Table 2. The personal-continuity and temporal-continuity items loaded on distinct factors. Informed by these findings, we created separate measures of personal continuity ($\alpha = .83$, $M = 3.52$, $SD = 0.91$) and temporal continuity ($\alpha = .67$, $M = 3.20$, $SD = 0.78$).

Table 2. Factor structure for personal-continuity and temporal-continuity items in Study 3

Item	Factor 1	Factor 2
Connected with my past	0.87	0.05
Connected with who I was in the past	0.87	0.16
Important aspects of personality remain the same across time	0.65	0.44
There is continuity in my life	0.62	0.28
<i>The past and present flow seamlessly together</i>	0.28	0.69
<i>The present is a mere continuation of the past</i>	0.11	0.71
<i>There is continuity between the past and present</i>	0.17	0.59
<i>The past merges nicely into the present</i>	0.05	0.33

Note. Personal-continuity items are in regular font and temporal-continuity items are in italics. Items were preceded with the stem: 'Thinking about this event makes me feel ...' Tabled values show the factor structure (correlations) following oblique (promax) rotation for a two-factor solution based on maximum likelihood estimation. The inter-factor correlation was 0.24, $SE = 0.10$, $z = 2.47$, $p = .014$. $N = 127$.

Effect of Nostalgia on Personal Continuity and Temporal Continuity

A mixed ANOVA, treating the assessments of personal continuity and temporal continuity as a within-subjects variable (assessments), revealed a significant main effect of condition (nostalgic versus ordinary event), $F(1, 124) = 15.21$, $p < .001$, $\eta^2 = 0.11$, and a significant within-subjects effect of assessments, $F(1, 124) = 12.28$, $p < .001$, $\eta^2 = 0.08$. Both main effects were qualified, however, by a significant Condition \times Assessments interaction, $F(1, 124) = 10.51$, $p = .002$, $\eta^2 = 0.07$. The interaction indicated that the overall tendency for nostalgic (compared with ordinary) recall to strengthen self-continuity was more strongly manifested on the personal-continuity than on the temporal-continuity assessment. Indeed, participants in the nostalgia condition ($M = 3.88$, $SD = 0.73$) reported significantly more personal continuity than those in the control condition ($M = 3.15$, $SD = 0.92$), $F(1, 124) = 24.20$, $p < .001$, $\eta^2 = 0.16$. Participants in the nostalgia condition ($M = 3.27$, $SD = 0.76$) did not report significantly more temporal continuity than those in the control condition ($M = 3.13$, $SD = 0.80$), $F(1, 124) = 1.03$, $p = .312$, $\eta^2 = 0.01$.

STUDY 4: DOES NOSTALGIA ELICIT SELF-CONTINUITY? DIFFERENTIATING BETWEEN NOSTALGIC AND POSITIVE RECOLLECTION IN A UK EXPERIMENT

We obtained evidence, in Study 3, that nostalgia increases self-continuity in US undergraduates. The effect of nostalgia was more pronounced for personal continuity than for temporal continuity. Strong confirmation of this hypothesised nostalgia effect provides construct validation for the personal-continuity assessment (Cronbach & Meehl, 1955). For this reason, and because we think the more concrete personal-continuity items are easier to comprehend (i.e. are more informally worded), we selected these four items to assess self-continuity in Study 4. The items comprise the Self-Continuity Index (SCI). Our first objective was to test the replicability of the Study 3 finding.

We also aimed to test an alternative explanation for the effect of nostalgia on self-continuity. According to this explanation, the finding is due to the positivity of nostalgic memories. After all, the content of nostalgic narratives is more positive than negative (Wildschut et al., 2006), and nostalgia typically (Batcho, 2013; Cheung et al., 2013, Study 2 and 4; Hepper et al., 2012, Study 7; Lasaleta, Sedikides, & Vohs, 2014, Experiment 4; Wildschut et al., Studies 5 and 6; Verplanken, 2012; Zhou et al., 2012, Study 1), but not always (Cheung et al., Study 3; Zhou et al., 2012, Studies 2–4; Stephan et al., 2014, Studies 4 and 5), increases PA compared with a control condition. Although investigations have begun to establish unique effects of nostalgic memories above and beyond PA (Cheung et al., 2013; Routledge et al., 2012, Studies 2 and 3; Stephan et al., 2012, Study 2; Stephan et al., 2014), we needed to address this explanation in the context of the current research. Hence, we manipulated nostalgic memories versus positive memories and ordinary memories, measured their ensuing PA and, most important, assessed their effects on state self-continuity. We

hypothesised that nostalgia (compared with positive and ordinary memories) would augment self-continuity.

Finally, we tested a demand characteristics explanation. Manipulation check items, by virtue of asking for level of experienced nostalgia, may influence reports of nostalgia. Specifically, participants in the nostalgia condition may infer that, because they were instructed to recall a nostalgic event, they should endorse the manipulation check items even when they do not experience nostalgia. Although a prior investigation has provided preliminary evidence against such an explanation (Zhou et al., 2012, Studies 3–5), we needed to test it in the context of the current research. Hence, we administered the manipulation check at the very end of the experiment.

Method

Participants and Design

Participants were 60 University of Southampton undergraduate students (40 women, 20 men). Their ages ranged from 18 to 30 years ($M=19.80$, $SD=1.84$). We assigned them randomly to the nostalgia, positive-past and ordinary-past conditions. Given that gender did not qualify the statistically significant results, we omitted this variable from the reported analyses.

Procedure and Materials

In the nostalgia condition, participants were instructed to ‘... bring to mind a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic’. In the positive-past condition, participants were instructed to ‘Please bring to mind a positive event in your life. Specifically, try to think of a past event that is positive’. In the ordinary-past condition, participants were instructed to ‘... bring to mind an ordinary life event from your past. Specifically, try to think of a past event that is ordinary’. Participants in each condition listed four event-relevant keywords and then took a few moments to think about the event and how it made them feel. They then provided a brief written account of the experience. These techniques were validated in past research (Routledge et al., 2012, Studies 2 and 3; Stephan et al., 2012, Study 2).

Positive Affect

Participants completed a brief state measure of PA ($\alpha=.90$, $M=4.85$, $SD=1.30$), comprising two items: ‘Thinking about this event makes me feel happy’ (1 = *strongly disagree*, 6 = *strongly agree*) and ‘Does thinking about your experience make you feel happy?’ (1 = *no happiness*, 6 = *very happy*).

Self-Continuity Index

To assess self-continuity, participants completed the SCI ($\alpha=.77$, $M=4.11$, $SD=0.99$). EFA in Study 3 revealed that the four SCI items loaded on the same factor, but it is important to confirm the proposed one-dimensional structure of the SCI in an independent sample. We therefore performed Confirmatory factor analysis (CFA) and found that the one-factor model provided good fit: $\chi^2(2, N=60)=2.24$, $p=.33$, SRMR=0.04, RMSEA=0.04, CFI=1.00. The ratio of observations to free parameters (60:8) exceeded the lower bound of 5:1 (Bentler & Chou, 1987).

Manipulation Check

Finally, participants completed the state version of the NI (Batcho, 1995), which served as the manipulation check ($\alpha=.87$, $M=2.75$, $SD=0.74$).

Results and Discussion

Positive Affect

Bringing to mind a positive past event should provoke more PA than bringing to mind a nostalgic or ordinary event (Stephan et al., 2012; see also Skowronski, Walker, Henderson, & Bond, 2013). Further, prior research has often found that bringing to mind a nostalgic (versus ordinary) event produces more PA (e.g. Batcho, 2013; Hepper et al., 2012, Study 7; Lasaleta et al., 2014, Experiment 4; Wildschut et al., Studies 5 and 6; Verplanken, 2012). An ANOVA revealed a main effect of condition, $F(2, 57)=3.34$, $p=.043$, $\eta^2=0.10$. Planned contrasts showed that PA was indeed higher in the positive-past condition ($M=5.53$, $SD=0.52$) than in the pooled nostalgia ($M=4.73$, $SD=1.44$) and ordinary-past ($M=4.40$, $SD=1.35$) conditions, $F(1, 57)=6.51$, $p=.013$, $\eta^2=0.10$. The nostalgia and ordinary-past conditions did not differ significantly, $F(1, 57)=0.71$, $p=.403$, $\eta^2=0.01$ (see also Cheung et al., Study 3; Zhou et al., 2012, Studies 2–4; Stephan et al., 2014, Studies 4 and 5). Considering the focus of this study, we note that a supplementary comparison between the positive-past and nostalgia conditions was also significant, $F(1, 57)=4.09$, $p=.048$, $\eta^2=0.06$.

Self-Continuity

There was a significant main effect of condition on self-continuity, $F(2, 57)=5.31$, $p=.008$, $\eta^2=0.16$. Planned contrasts showed that self-continuity was higher in the nostalgia condition ($M=4.49$, $SD=0.90$) than in the pooled positive-past ($M=3.87$, $SD=0.61$) and ordinary-past ($M=3.60$, $SD=1.21$) conditions, $F(1, 57)=10.01$, $p=.003$, $\eta^2=0.15$. The positive-past and ordinary-past conditions did not differ significantly, $F(1, 57)=0.62$, $p=.435$, $\eta^2=0.01$. Supplementary to the planned contrasts, we found that a simple comparison between the nostalgia and positive-past condition was also significant, $F(1, 57)=4.53$, $p=.038$, $\eta^2=0.07$.

Controlling for Positive Affect

We repeated the analysis of self-continuity, controlling for PA by including it as a covariate. As before, there was a significant main effect of condition on self-continuity, $F(2, 56)=5.77$, $p=.005$, $\eta^2=0.16$. Self-continuity remained significantly higher in the nostalgia condition than in the pooled positive-past and ordinary-past conditions, $F(1, 56)=11.46$, $p=.001$, $\eta^2=0.16$. The positive-past and ordinary-past conditions did not differ significantly, $F(1, 56)=0.04$, $p=.847$, $\eta^2=0.001$. A supplementary test revealed that the difference between the nostalgia and positive-past condition also remained significant when we controlled for PA, $F(1, 56)=6.60$, $p=.013$, $\eta^2=0.09$. In all, nostalgia increased self-continuity above and beyond memory for a positive past event and ensuing PA.

Manipulation Check

There was a significant main effect of condition on state nostalgia, $F(2, 57) = 3.92, p = .025, \eta^2 = 0.12$. Planned contrasts revealed that participants were more nostalgic in the nostalgia condition ($M = 3.01, SD = 0.79$) than in the pooled positive-past ($M = 2.48, SD = 0.55$) and ordinary-past ($M = 2.51, SD = 0.66$) conditions, $F(1, 57) = 7.83, p = .007, \eta^2 = 0.12$. The positive-past and ordinary-past conditions did not differ significantly, $F(1, 57) = 0.02, p = .898, \eta^2 = 0.0003$. A supplementary comparison between the nostalgia and positive-past conditions was also significant, $F(1, 57) = 5.57, p = .022, \eta^2 = 0.09$. This pattern rules out a demand characteristics explanation.

GENERAL DISCUSSION

Nostalgia is a psychological resource that contributes to equilibrium in the self-system. Self-discontinuity, especially negative self-discontinuity, disrupts equilibrium. Nostalgia, we hypothesised, would constitute a response to self-discontinuity and foster self-continuity, thus re-instating equilibrium. We tested this regulatory model of nostalgia in the tradition of establishing a causal chain (Spencer et al., 2005).

Summary of Findings

Self-discontinuity can have harmful consequences such as negative affect, anxiety, ineffective coping, unethical decision-making and behaviour, and, in extreme cases, suicide (Chandler, Lalonde, Sokol, & Hallett, 2003; Hershfield, Cohen, & Thompson, 2012; Milligan, 2003; Sadeh & Karniol, 2012). We reasoned, taking the lead from Davis (1979), that nostalgia is an antidote to the disordering influence of self-discontinuity. Specifically, we posited that nostalgia is both a natural and transient response to self-discontinuity. We obtained evidence consistent with these hypotheses in a correlational study, where we assessed naturalistically the two constructs, and in an experimental investigation, where we manipulated self-discontinuity and measured state nostalgia. In the correlational field investigation (Study 1), self-discontinuity, especially when stemming from negative life events, was associated with higher proneness to nostalgia. In the laboratory experiment (Study 2), negative self-discontinuity (compared with positive self-discontinuity and self-continuity) led to elevated levels of nostalgia. In all, self-discontinuity triggers nostalgia.

Self-continuity can have beneficial consequences for well-being (King, Scollon, Ramsey, & Williams, 2000; Sheldon, Ryan, Rawsthorne, & Ilardi, 1997), equanimity (Landau et al., 2008; Sani, Herrera, & Bowe, 2009) and physical health (Anderzén & Arnetz, 1999; Pennebaker, 2003). We hypothesised, again taking the lead from Davis (1979), that nostalgia gives rise to self-continuity. We obtained support for this hypothesis in two laboratory experiments. In Study 3, we induced nostalgic recollection (versus ordinary autobiographic recollection) and assessed state self-continuity. Nostalgia led to increases in self-continuity, and those increases were higher for personal continuity than temporal continuity. In Study 4, we induced nostalgic reflection (versus ordinary autobiographic recollection versus positive

autobiographic reflection) and measured personal continuity (i.e. SCI). Nostalgia raised self-continuity more so than the two control conditions, and above and beyond PA. Demand characteristics could not account for this effect. In all, nostalgia fosters self-continuity (see also Reid et al., 2014; Sedikides et al., 2014).

The reported studies relied on a convergent operations approach (Campbell & Fiske, 1959). They combined correlational and experimental methods, implemented divergent operationalisations of the relevant constructs (self-discontinuity, nostalgia and self-continuity) at the dispositional and state level and tested university students and community members of varying ages. The consistency in findings across studies, despite different measures and approaches, helps to offset alternative interpretations. For example, an alternative may state that asking people to imagine being cut-off from past environments simply leads them to miss those environments (Study 2) or that having people think about their past simply makes them feel more connected to their past (Study 3). Although these characterisations are accurate, they miss the richness and broader explanatory scope of the putative regulatory model. Indeed, the present regulatory model can explain both sets of findings, as well as the nuances therein: that it is primarily negative discontinuity that elicits nostalgia and that nostalgia—but not merely any positive-past memory—sparks self-continuity. Thus, taken together, the findings were consistent with the postulates of our regulatory model, namely, that nostalgia counteracts self-discontinuity and increases self-continuity. In so doing, the findings assert the homeostatic or restorative role of nostalgia.

Implications

An unanswered question is how self-discontinuity triggers nostalgia. As a reminder, Davis (1979, pp. 35–36) proposed several mediators, such as appreciation of former selves, exclusion of unpleasant memories, positive reinterpretation of ‘marginal, fugitive, and eccentric facets of earlier selves’ and establishment of biographical benchmarks. Although it is not entirely clear how some of these variables might be operationalised, the search for mediation of the effect of self-discontinuity on nostalgia is worthy of empirical attention.

Nostalgia is a resource that can be implemented in times of psychological aversiveness, such as negative affect, discomfort due to unfavourable feedback, boredom, meaninglessness or loneliness. Nostalgia regulates these aversive states. In particular, nostalgia decreases defensiveness in coping with unfavourable performance feedback (Vess et al., 2012), wards off boredom (Van Tilburg et al., 2013), reduces threats to perceived meaning by replenishing lost meaning in life (Routledge et al., 2011, 2012), and offsets loneliness via increases in perceived social support (Zhou et al., 2008). In a similar vein, we obtained evidence consistent with the possibility that nostalgia counters self-discontinuity by raising self-continuity. What is the mechanism through which nostalgia fosters self-continuity? Recent research suggests one such candidate, that is, social connectedness (Sedikides et al., 2014). Nostalgia strengthens a sense of belongingness or acceptance, which, in turn, elevates self-continuity. Other candidates are plausible. For example, nostalgia instils perceptions of life as meaningful (Routledge, Sedikides, Wildschut,

& Juhl, 2013) and renders the past self more relevant or vivid (Stephan et al., 2012); either of these two mechanisms may, in turn, heighten self-continuity.

We focused in this article on discontinuity and continuity of the individual self. Discontinuity of the collective (i.e. group) self can also be damaging: it is related to alienation or weakening of group identification (Sani, 2005) as well as social unrest and resistance to change (Jetten & Hutchison, 2011)—assuming that the latter are deemed subjectively undesirable by group members. It would be timely to explore the role of collective nostalgia (i.e. nostalgia about shared group memories; Wildschut, Bruder, Robertson, Van Tilburg, & Sedikides, in press) as a response to discontinuity of the collective self, and subsequently to examine whether collective nostalgia constitutes a precursor to continuity of the collective self.

The findings have practical or interventional implications. Several settings (e.g. nursing homes, prisons, hospitals, and even universities for first-year students) may entail high levels of felt self-discontinuity and accompanying nostalgia. If so, reinforcing nostalgic reverie may help to alleviate self-discontinuity (and, in particular, negative self-discontinuity; see Iyer & Jetten, 2011) and raise self-continuity. The latter, in turn, may contribute to psychological health (King et al., 2000; Sedikides et al., 2014; Sheldon et al., 1997).

Coda

Self-discontinuity, and in particular negative self-discontinuity, is positively associated with and elicits nostalgia. Nostalgia fosters self-continuity. Our findings suggest that the emotion of nostalgia is a resource that functions to establish psychological homeostasis by regulating the dynamic between self-discontinuity and self-continuity.

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