

## FROM NOSTALGIA THROUGH SOCIAL CONNECTEDNESS TO SELF-CONTINUITY: REPLICATION AND EXTENSION

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**Abstract:** Prior research, relying mostly on samples from the UK and the US, has indicated that nostalgia serves as a source of self-continuity (a sense that one's past is interwoven with one's present), and it does so by increasing social connectedness (a sense of belongingness and acceptance). The present research aimed to conceptually replicate and extend these findings in two experiments. Indeed, the study findings replicated those of previous research in another culture (Greece; Experiment 1), with a different control group (Experiment 1), and using an alternative nostalgia manipulation (a prototype-based technique; Experiment 2). The reported experiments established that nostalgia increases self-continuity by fostering social connectedness.

**Key words:** Emotion, Nostalgia, Social connectedness, Self, Self-continuity

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We are concerned in this article with the relation between nostalgia and self-continuity. In prior research, Sedikides et al. (2016) reported that nostalgia increases self-continuity, and this effect is transmitted via social connectedness. The aim in the current set of two experiments was to replicate and extend these findings in a South-European culture (Greece; Experiment 1), using an alternative control group (Experiment 1), and using a nostalgia manipulation that did not include the term “nostalgia” (a prototype-based technique; Experiment 2).

### ***Nostalgia***

Nostalgia, according to *The New Oxford Dictionary of English* (Pearsall, 1998), is “a sentimental longing or wistful affection for the past” (p. 1266). Laypersons, not only in the UK and US (Hepper, Ritchie, Sedikides, & Wildschut, 2012), but also across 18 cultures that span five continents (Hepper et al., 2014), seem to concur. They think of nostalgia as entailing fond and personally meaningful recollections of childhood, close relationships, or keepsakes, and as involving remembering, longing, and wanting to return to the past. Codings of nostalgic narratives have complemented the portrait of nostalgia. During nostalgic reverie, individuals recount momentous occasions from their past (e.g., anniversaries, holidays, celebrations, graduations, times with friends) through rose-colored glasses, and pine for them. Individuals feel sentimental, mostly happy but with a tinge of longing (Abeyta, Routledge, Roylance, Wildschut, & Sedikides, 2015; Batcho, 1998; Wildschut, Sedikides, Arndt, & Routledge, 2006). In all, nostalgia is a bittersweet, albeit predominantly positive, and self-relevant emotion that occurs relatively frequently (i.e., several times a week) among both students (Wildschut et al., 2006) and community members of all ages (Hepper, Wildschut, Sedikides, Robertson, & Routledge, 2019), and upon which individuals can draw to establish psychological equanimity or homeostasis (Sedikides, Wildschut, Routledge, Arndt, et al., 2015) and, ultimately, find meaning in their lives (Sedikides & Wildschut, 2018).

Above all, however, nostalgia is a social emotion. It reflects the capacity to draw strength from recollections of a shared past with significant others. To be exact, by reminding one of valued relationships and social experiences, nostalgizing boosts social connectedness, defined as subjective perceptions of belongingness and acceptance. Social connectedness, then, reflects how an individual feels that they are connected to their social environment. Nostalgizing, for example, strengthens the sense of being protected and socially supported, offsets the experience of loneliness, reduces attachment insecurity (i.e., lowers attachment avoidance and attachment anxiety), increases proximity toward others, galvanizes belief in interpersonal competence, grows trust in others, elevates the importance of relationship goals, and

fortifies ingroup identity against group-based exclusion (Abakoumkin, Wildschut, Sedikides, & Bakarou, 2017; Abeyta, Routledge, & Juhl, 2015; Stephan et al., 2014; Wildschut et al., 2006; Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010; Zhou, Sedikides, Wildschut, & Gao, 2008; Zhou, Wildschut, Sedikides, Shi, & Feng, 2012).

### ***Self-continuity***

Self-continuity is the sense that one's past is interwoven with one's present (Αμπακούμκιν, 2018; Sedikides, Wildschut, Routledge, & Arndt, 2015). This subjective link between one's past and one's present constitutes the basis of identity, providing the sense of stability in an entity that undergoes interminate psychological and physical changes over time (Neisser, 1988). Self-continuity is the synthesizer of human experience (Atchley, 1989), and a psychological state that people value (Lampinen, Odegard, & Leding, 2004) and pursue (Vignoles, Regalia, Manzi, Golledge, & Scabini, 2006).

Self-continuity is a marker of psychological adjustment. For example, self-continuity is associated positively with hedonic wellbeing, generally defined as pleasure attainment and pain avoidance (Ryan & Deci, 2001). Specifically, higher self-continuity is related to increased positive affect (Troll & Skaff, 1997) and decreased negative affect or anxiety (Chandler, Lalonde, Sokol, & Hallett, 2003). As another example, self-continuity is positively related to existential equanimity. Specifically, it provides protection from death ideation by reinforcing perceptions of significance and order (Landau, Greenberg, & Solomon, 2008). Finally, self-continuity is associated with cultural re-adjustment or repatriation success. Specifically, it soothes expatriates' transition from the host culture to the home culture through its positive association with approach motivation, job satisfaction, and self-esteem (Zou, Wildschut, Cable, & Sedikides, 2018).

### ***Forays into the relation between nostalgia and self-continuity***

But how is self-continuity generated? What kind of resource is likely to spawn it? Sedikides, Wildschut, Gaertner, Routledge, and Arndt (2008) identified nostalgia as a likely candidate, and Sedikides, Wildschut, Routledge, and Arndt (2015) tested empirically this notion. Their starting point was Davis's (1979) speculation that nostalgia is mobilized as a coping mechanism when individuals face discontinuity in their lives. Discontinuity is experienced as a threat and one seeks to restore continuity. Nostalgia is a tool toward this end. It "marshal[s] our psychological resources for continuity" (Davis, 1979, p. 34). In addition, nostalgic recollections connect a person's past with their present by referring to coherent experiences and relationships and, more generally, life events (Sedikides et al.,

2016; Sedikides, Wildschut, Routledge, & Arndt, 2015). The idea that nostalgizing links one's past with one's present was buttressed by narrative analyses (Stephan, Sedikides, & Wildschut, 2012, Experiment 1). Stephan et al. (2012) manipulated nostalgia with the Event Reflection Task (ERT; Sedikides, Wildschut, Routledge, Arndt, et al., 2015), in which participants (1) visualize a personally-experienced nostalgic event versus a personally-experienced ordinary (e.g., everyday or regular) event, (2) list a few relevant keywords and reflect on how the event makes them feel, and finally (3) write a brief narrative of the pertinent event. Stephan et al. (2012) found that nostalgic narratives frequently mentioned concrete behaviors in the present ("I smile...") that were evoked by a past event ("...when I look at my family photo on my desk"). The researchers coded the narratives on concreteness/abstractness along guidelines provided by the Linguistic Category Model (Coenen, Hedebouw, & Semin, 2006) and the Linguistic Inquiry and Word Count (Pennebaker, Booth, & Francis, 2007). Nostalgic narratives contained more abstract terms than control narratives. At the same time, nostalgic (vs. ordinary) narratives consisted of more concrete terms that undergirded the relevance of the nostalgic event for the nostalgizer's present. Stephan et al. (2012, Experiment 2) replicated these findings adding a second control, a positive event condition.

Sedikides, Wildschut, Routledge, and Arndt (2015, Study 3) proceeded to test directly the hypothesis that nostalgia augments self-continuity. They induced nostalgia with the ERT (nostalgic vs. ordinary event) and measured self-continuity with a 4-item Self-Continuity Index (item wordings are presented in the Method section, Experiment 1). Nostalgia (relative to control) augmented self-continuity. In a follow-up investigation, Sedikides, Wildschut, Routledge, and Arndt (2015, Study 4) also induced nostalgia with the ERT, although they included a second (i.e., positive event) control condition, and assessed self-continuity. Nostalgia (in comparison to both controls) augmented self-continuity, and it did so above and beyond positive affect.

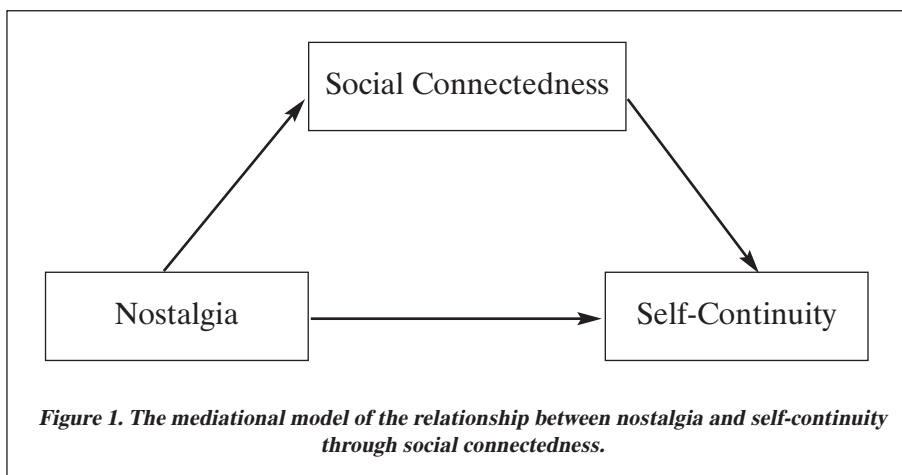
Sedikides et al. (2016) asked *how* nostalgia augments self-continuity. Capitalizing on the social character of the emotion, they hypothesized that it does so by fostering social connectedness. Social connectedness, in turn, increases self-continuity and thus underlies the connection between nostalgia and self-continuity (Figure 1). Evidence indeed has established that nostalgia fosters social connectedness (for a review, see Sedikides, Wildschut, Routledge, Arndt, et al., 2015). Further, nostalgia-evoked social connectedness includes the mental presence of meaningful relationships and their time course in one's life. This latter element confers self-continuity by connecting one's time points in life. Sedikides et al. (2016) went on to show that experimentally-induced social connectedness (i.e., feeling belonging vs. lonely) increases self-continuity (Experiment 4).

Sedikides et al. (2016; Experiments 1-3, 6) crucially provided support for the hypothesis that the effect of nostalgia on self-continuity is transmitted through social

connectedness, that is, social connectedness mediates this effect (see also Van Tilburg, Sedikides, Wildschut, & Vingerhoets, 2019). They manipulated nostalgia with the ERT (nostalgic vs. ordinary event; Experiment 2). Then they measured social connectedness with an established 4-item scale (Hepper et al., 2012; Wildschut et al., 2006) and measured self-continuity with the 4-item Self-Continuity Index mentioned earlier. Replicating prior findings (Sedikides, Wildschut, Routledge, & Arndt, 2015, Study 3), nostalgia augmented self-continuity. More importantly, social connectedness emerged as a mediator of the effect of nostalgia on self-continuity. These findings held both in a UK and a Chinese sample. The findings also held when nostalgia was manipulated with a version of the ERT that included a positive event condition (thus controlling for positive affect; Experiment 3), and had the manipulation check last in order (Experiment 3) so as to minimize demand characteristics, or when the manipulation check was omitted altogether for the same reason (Experiment 6). Finally, the findings held when nostalgia was manipulated via song lyrics (i.e., songs that participants had previously rated as nostalgic vs. not) rather than the ERT (Experiment 1).

### **Overview**

In the present research, we build on the Sedikides et al. (2016) findings and extend them. In two experiments, we expected to replicate the mediation model introduced by Sedikides et al. (2016; Figure 1). Specifically, we tested whether nostalgia augments self-continuity and whether it does so through social connectedness in a Greek sample (Experiment 1), using a new control group (Experiment 1) and a different nostalgia manipulation (Experiment 2).



## EXPERIMENT 1: EVIDENCE FROM GREECE

In Experiment 1, we tested, in a Greek sample, the hypothesis that the effect of nostalgia on self-continuity is mediated by social connectedness. We implemented a modified version of the ERT. Alongside the standard nostalgic-event and ordinary-event conditions, we introduced an additional control condition in which we instructed participants to recall a specific ordinary event. The reason for introducing this additional control condition is that, when we piloted the Greek translation of the ERT, participants in the standard control condition occasionally produced narratives with nostalgic content (e.g., vacations from last summer). As a safeguard, we therefore added a control condition in which we unequivocally instructed participants to recall a common, everyday event.

### Method

#### *Participants and design*

Participants were 122 University of Thessaly student volunteers (106 women, 15 men, one undisclosed). Their ages ranged from 18 to 44 years ( $M = 20.73$ ,  $SD = 5.41$ ; one undisclosed). They were randomly assigned to the nostalgia, standard control (ordinary past event), and new control (everyday ordinary event) conditions<sup>1</sup>. Participants completed the materials in their native language. The questionnaires were translated by two bilinguals, were checked by a third one (“committee of bilinguals” approach; Brislin, 1980), and were finalized after pilot testing. Due to the small number of male participants, we did not consider gender in the analyses reported below.

#### *Procedure and materials*

Participants first completed the ERT (Sedikides, Wildschut, Routledge, Arndt, et al., 2015). In the nostalgia condition, we instructed participants to “...think of a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic.” In the standard control condition, we instructed participants to “...think of an ordinary event in your life. Specifically, try to think of a past event that is ordinary.” In the new control condition, we instructed participants to “...think of an ordinary

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<sup>1</sup> We use the labels standard control condition and new control condition interchangeably with ordinary past event condition and everyday ordinary event condition, respectively.

event in your life. Specifically, try to think of a past event that is completely ordinary, common, everyday. For example, an event like taking the city bus to get from one place to another.” In all conditions, participants wrote down four keywords relevant to the event and took a few moments to reflect on the event and how it made them feel. Then they were allotted a few minutes to produce a written account of the event.

Subsequently, participants completed a 3-item nostalgia manipulation check (1 = *strongly disagree*, 6 = *strongly agree*): “Right now, I am feeling quite nostalgic,” “Right now, I am having nostalgic feelings,” “I feel nostalgic at the moment” ( $\alpha = .86$ ,  $M = 3.85$ ,  $SD = 1.47$ ). The manipulation check is well-validated (Hepper et al., 2012; Routledge et al., 2011; Wildschut et al., 2006). We measured self-continuity with the 4-item Self-Continuity Index (1 = *strongly disagree*, 6 = *strongly agree*; Sedikides, Wildschut, Routledge, & Arndt, 2015): “I feel connected with my past,” “I feel connected with who I was in the past,” “There is continuity in my life,” “Important aspects of my personality remain the same across time” ( $\alpha = .72$ ,  $M = 4.14$ ,  $SD = 1.23$ ). Finally, we measured social connectedness with a 4-item scale (1 = *strongly disagree*, 6 = *strongly agree*; Hepper et al., 2012; Wildschut et al., 2006): “I feel connected to loved ones,” “I feel protected,” “I feel loved,” “I feel I can trust others” ( $\alpha = .88$ ,  $M = 3.94$ ,  $SD = 1.52$ ). Correlations between the nostalgia manipulation check scores and the social connectedness and self-continuity measures are presented in Table 1.

**Table 1. Correlations between Nostalgia Manipulation Check, Social Connectedness, and Self-Continuity: Experiment 1 (N = 122) and Experiment 2 (N = 193)**

	Nostalgia Check	Social Connectedness	Self-Continuity
Nostalgia Check		.500**	.460**
Social Connectedness	.250**		.612**
Self-Continuity	.354**	.515**	

**Note:** Experiment 1 coefficients are depicted above the diagonal; Experiment 2 coefficients are depicted below the diagonal.

\* $p < .05$ . \*\* $p < .01$ .

## Results and Discussion

### *Planned contrasts and power*

To partition the overall differences between the three conditions, we used two planned contrasts. The focal contrast compared the nostalgia condition to the pooled control conditions (standard and new control). The remaining contrast tested the difference between the two control conditions (standard vs. new control). We

hypothesized that social connectedness and concomitant self-continuity would be higher in the nostalgia condition compared to the pooled control conditions. Whether there would be significant differences in social connectedness or self-continuity between the two control conditions was an open question. We used G\*Power 3.1 to calculate the requisite sample size for achieving power = .80 for detecting the predicted difference between the nostalgia condition and the pooled control conditions (i.e., the focal contrast), assuming a medium effect size ( $f = 0.25$ ) and  $\alpha = .05$ . The required sample size (128) narrowly exceeded our obtained sample size (122) and, as a result, we achieved power = .78 to detect a medium-sized effect.

### ***Manipulation check***

An Analysis of Variance (ANOVA) yielded a significant effect of condition,  $F(2, 119) = 9.50, p < .001, \eta_p^2 = .14, 95\% \text{ CI } [.036, .245]$ ; for the calculation of 95% confidence intervals we used the NoncF3 macro (Wuensch, 2015). As intended, participants in the nostalgia condition felt more nostalgic ( $M = 4.57, SD = 0.86$ ) than those in the pooled standard ( $M = 3.40, SD = 1.79$ ) and new ( $M = 3.48, SD = 1.41$ ) control conditions,  $F(1, 119) = 18.99, p < .001, \eta_p^2 = .14, \text{ CI } [.042, .252]$ . The two control conditions did not differ from each other,  $F(1, 119) = 0.06, p = .803$ .

### ***Effect of nostalgia on self-continuity***

A 3 (condition) ANOVA produced a significant effect of condition,  $F(2, 119) = 17.94, p < .001, \eta_p^2 = .23, 95\% \text{ CI } [.104, .345]$ . As hypothesized, participants in the nostalgia condition ( $M = 4.89, SD = 0.78$ ) reported higher self-continuity than those in the pooled standard ( $M = 3.99, SD = 1.30$ ) and new ( $M = 3.50, SD = 1.17$ ) control conditions,  $F(1, 119) = 30.93, p < .001, \eta_p^2 = .21, \text{ CI } [.090, .325]$ . The difference between the two control conditions was marginal,  $F(1, 119) = 3.86, p = .052, \eta_p^2 = .03, \text{ CI } [.000, .114]$ , reflecting a tendency for participants who thought about an unspecified ordinary event to report higher self-continuity than those who thought about an everyday ordinary event. Because self-continuity was marginally higher in the standard (than new) control condition, we wondered if the nostalgia and standard control condition differed on self-continuity. Consistent with prior ERT experiments, self-continuity was significantly higher in the nostalgia (than standard control) condition,  $F(1, 78) = 14.70, p < .001, \eta_p^2 = .16, \text{ CI } [.038, .301]$ .



### **Mediation by social connectedness**

An ANOVA produced a significant effect of condition on social connectedness,  $F(2, 119) = 8.96, p < .001, \eta_p^2 = .13, CI [.032, .237]$ . Participants in the nostalgia condition ( $M = 4.57, SD = 1.10$ ) reported higher social connectedness than those in the pooled standard ( $M = 3.96, SD = 1.69$ ) and new ( $M = 3.26, SD = 1.49$ ) control conditions,  $F(1, 119) = 12.58, p = .001, \eta_p^2 = .10, CI [.019, .203]$ . The difference between the control conditions was also significant,  $F(1, 119) = 4.59, p = .034, \eta_p^2 = .04, CI [.000, .123]$ . Participants who thought about an unspecified ordinary past event felt more socially connected than those who thought about an everyday ordinary event. The finding that social connectedness was significantly higher in the standard (than new) control condition raises the question whether the nostalgia and standard control condition differed on social connectedness. This difference was marginal,  $F(1, 78) = 3.76, p = .056, \eta_p^2 = .05, CI [.000, .161]$ .

The ANOVA results indicated that social connectedness qualifies as a potential mediator of nostalgia's effect on self-continuity. In addition, social connectedness was associated with self-continuity (Table 1). To examine the indirect effect of nostalgia (vs. control conditions) on self-continuity via social connectedness, we conducted a bootstrapping analysis (Hayes, 2013, PROCESS macro, Model 4, 10,000 bootstrap samples). Specifically, we tested the contrast of nostalgia versus the pooled control conditions, including the contrast between the control conditions as a covariate. The indirect effect of nostalgia (vs. control conditions) on self-continuity via social connectedness was significant,  $M_{indirect\ effect} = .263, SE = .087, CI [.118, .458]$ . The effect of nostalgia on self-continuity was mediated by social connectedness. In addition, the indirect effect of nostalgia (vs. the standard control condition) on self-continuity via social connectedness was also significant,  $M_{indirect\ effect} = .236, SE = .146, CI [.0002, .572]$ .

### **Summary**

This experiment replicated and extended the Sedikides et al. (2016) findings in a Greek sample. Nostalgia augmented self-continuity, and this effect was transmitted via social connectedness. In addition to the standard ERT control condition, we added a new control condition in which participants were explicitly instructed to recall an everyday ordinary event. Our reason for doing so was based on pilot testing, which revealed that participants in the standard control condition sometimes recalled nostalgically-toned memories. Although the two control conditions did not differ on the nostalgia manipulation check, self-continuity (marginally) and social

connectedness (significantly) were higher in the standard (vs. new) control condition. An explanation for these differences is that the more specific and ordinary an event is, the less likely it seems this event is integrated in one's life course, thereby yielding less social connectedness and self-continuity. This pattern vindicated our decision to add the everyday control condition as a precaution. Nonetheless, the simple comparisons between the nostalgia and standard control condition yielded a significant (self-continuity) and a marginal (social connectedness) difference, while the indirect effect of nostalgia on self-continuity via social connectedness was significant even when considering only the standard control condition.

## **EXPERIMENT 2: A UK NOSTALGIA PROTOTYPE EXPERIMENT**

In Experiment 1, and most of the relevant literature (Sedikides, Wildschut, Routledge, & Arndt, 2015; Sedikides et al., 2016), nostalgia was induced by asking participants to bring to mind a relevant event, list four keywords, and write about it (i.e., the ERT). In Experiment 2, once again we relied upon autobiographical recall to manipulate nostalgia, but we implemented two alternative methods of doing so in order to compare their effects. Whereas half of participants completed the ERT (i.e., nostalgic vs. ordinary event), for the other half we capitalized on an investigation of lay conceptions of nostalgia, which identified central and peripheral features of the nostalgia prototype (Hepper et al., 2012). We used these features to induce nostalgia. This prototype-based method has the advantage of reducing demand characteristics, because participants are not presented with the term "nostalgia" as part of the manipulation. Specifically, we asked participants to recall either a nostalgic event (in one condition) or an event characterized by central nostalgia features (in another condition). Examples of central features are: "reminiscence," "keepsakes," "familiar smells," and "rose-tinted memories." We asked control participants to recall either an ordinary event (in one condition) or an event characterized by peripheral nostalgia features (in another condition). Examples of peripheral features are: "daydreaming," "wishing," "bittersweet," and "achievements." Note that the control conditions in both manipulations reflect low-nostalgia rather than the complete absence of nostalgia. Both the recall of an ordinary past event, as well as the recall of an event with peripheral nostalgia features, will contain some nostalgic content. Finally, we assessed social connectedness and self-continuity.

We hypothesized that participants who recall a nostalgic event or an event characterized by central nostalgia features would experience more self-continuity than those who recall an ordinary event or an event characterized by peripheral

nostalgia features. Confirmation of this hypothesis would provide evidence that lay conceptions of nostalgia dovetail with the manner in which we have previously conceptualized and manipulated nostalgia. More importantly, we hypothesized that the effect of nostalgia on self-continuity would be mediated by social connectedness.

## Method

### *Participants*

Participants were 193 UK residents (131 females, 62 males) recruited by advertisement at the University of Southampton ( $n = 76$ ), an older adults' volunteer database ( $n = 71$ ), and snowball opportunity sampling in the local community ( $n = 46$ ). Ages ranged from 18 to 87 years ( $M = 44.77$ ,  $SD = 24.60$ )<sup>2</sup>. Participants completed experimental booklets either at home (returning them by mail) or in the laboratory, and were reimbursed with course credit or payment (£5). Preliminary analyses revealed that gender and age did not qualify the results, and we thus omitted these variables from the reported analyses.

### *Materials and Procedure*

We assigned participants randomly to one of four conditions in a 2 (nostalgia: nostalgia vs. control) x 2 (induction type: ERT vs. prototype) design. In each condition, participants recalled an autobiographical event. Under standard, ERT induction type, participants in the nostalgia condition thought of a nostalgic event in their life (“... bring to mind a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic”), whereas participants in the control condition thought of an ordinary event in their life (“... bring to mind an ordinary event in your life”). Under prototype induction type, participants in the nostalgia condition thought of an event characterized by at least five (out of 10) central nostalgia features, whereas participants in the control condition thought of an event characterized by at least five (out of 10) peripheral nostalgia features. The word “nostalgia” was not mentioned in the instructions. Specifically, participants in these two conditions were asked to “bring to mind an event in your life that is relevant to or characterized by at least five of these features . . . whereby at least five of the features either were *part* of the event, and/or describe your experience as you *think about* the event” (italics in original).

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<sup>2</sup> Data from this study were also used in Study 7 of Hepper et al. (2012), which examined the influence of nostalgia on positive affect, self-esteem, social connectedness, and meaning in life. Analyses and findings including self-continuity are presented here for the first time.

Participants circled all the features that were relevant to their event. All participants then proceeded to write a brief description of the relevant event.

Subsequently, participants completed the same manipulation check (1 = *strongly disagree*, 6 = *strongly agree*;  $\alpha = .96$ ,  $M = 4.07$ ,  $SD = 1.50$ ), measure of social connectedness (1 = *strongly disagree*, 6 = *strongly agree*;  $\alpha = .88$ ,  $M = 3.67$ ,  $SD = 1.45$ ), and measure of self-continuity (1 = *strongly disagree*, 6 = *strongly agree*;  $\alpha = .82$ ,  $M = 4.17$ ,  $SD = 1.28$ ) as in Experiment 1. Four participants left the latter two measures blank, leaving 189 in the main analyses. Correlations between the nostalgia manipulation check scores and the social connectedness and self-continuity measures are shown in Table 1.

## Results and Discussion

### **Power**

We used G\*Power 3.1 to calculate the requisite sample size for achieving power = .80 to detect the hypothesized main effect of nostalgia, assuming a medium effect size ( $f = 0.25$ ) and  $\alpha = .05$ . Our obtained sample size (189) exceeded the required sample size (128), producing power = .93 to detect a medium-sized effect.

### **Manipulation check**

A 2 (nostalgia) x 2 (induction type) ANOVA yielded a nostalgia main effect. As intended, participants reported being more nostalgic in the nostalgia ( $M = 4.39$ ,  $SD = 1.38$ ) than control ( $M = 3.68$ ,  $SD = 1.56$ ) condition,  $F(1, 184) = 11.79$ ,  $p < .001$ ,  $\eta_p^2 = .06$ , CI [.011, .136]. No other effects were significant.

### **Self-continuity**

A 2 (nostalgia) x 2 (induction type) ANOVA produced a main effect of nostalgia,  $F(1, 185) = 16.80$ ,  $p < .001$ ,  $\eta_p^2 = .08$ , CI [.023, .166]. Participants reported higher self-continuity in the nostalgia ( $M = 4.51$ ,  $SD = 1.04$ ) than control ( $M = 3.78$ ,  $SD = 1.42$ ) condition. No other effects were significant.

### **Mediation by social connectedness**

A 2 (nostalgia) x 2 (induction type) ANOVA yielded a main effect of nostalgia,  $F(1, 185) = 6.49$ ,  $p = .012$ ,  $\eta_p^2 = .03$ , CI [.002, .099]. Participants reported higher social

connectedness in the nostalgia ( $M = 3.91$ ,  $SD = 1.38$ ) than control ( $M = 3.41$ ,  $SD = 1.48$ ) condition. Thus, social connectedness qualifies as a potential mediator of nostalgia's effect on self-continuity. In addition, social connectedness was associated with self-continuity (Table 1). We used the PROCESS macro (Hayes, 2013, Model 4) to test the indirect effect of nostalgia on self-continuity via social connectedness (10,000 bootstrap samples). To specify correctly the experimental design, we included the induction type main effect and the Induction Type x Nostalgia interaction as covariates. The indirect effect of nostalgia on self-continuity via social connectedness was significant,  $M_{indirect\ effect} = 0.11$ ,  $SE = 0.05$ , CI [0.025, 0.220].

### **Summary**

Bringing to mind a nostalgic memory elicited higher self-continuity compared to a control autobiographical memory. More importantly, the effect of nostalgia on self-continuity was mediated by social connectedness. These findings address the concern that experimental inductions instructing participants to recall a nostalgic event (Stephan et al., 2012; Turner, Wildschut, Sedikides, & Gheorghiu, 2013; Wildschut et al., 2006) rely on their understanding of the word "nostalgia". We used such a standard induction alongside a prototype-based induction in which participants recalled an event characterized by central (compared to peripheral) prototypic features of nostalgia (Hepper et al., 2012). This also strengthens the findings of Experiment 1 that relied on the ERT to induce nostalgia. Self-continuity was substantially higher in the nostalgia than in the control conditions, irrespective of how nostalgia was induced, providing evidence for the generality of nostalgia's influence on social connectedness and self-continuity.

## **GENERAL DISCUSSION**

We set out to test the replicability and to extend findings by Sedikides et al. (2016) on (1) the influence of nostalgia upon self-continuity and (2) a plausible pathway through which this influence is exerted, namely, social connectedness.

### **Summary of findings**

Self-continuity glues the pieces of one's life into a unified trajectory. This is the basis of identity (James, 1890; Neisser, 1988), allowing a person to feel that she or he is the same entity throughout their life course. Davis (1979) proposed that nostalgia is

a source of self-continuity, and prior research backed this proposal (Sedikides et al., 2016; Sedikides, Wildschut, Routledge, & Arndt, 2015; Zou et al., 2018). In addition, prior research pointed to social connectedness as a mechanism through which nostalgia augments self-continuity (Sedikides et al., 2016), given the sociality of nostalgia (Sedikides, Wildschut, Routledge, Arndt, et al., 2015). We replicated this prior research and extended it in a South-European culture (i.e., Greece; Experiment 1), by including an additional control group (i.e., an everyday ordinary event; Experiment 1) and a different nostalgia manipulation that did not include the term “nostalgia” (i.e., a prototype-based one; Experiment 2).

Our findings point to the robustness of the mediation model (Figure 1). These findings highlight the model’s cross-cultural relevance, given that it has passed empirical tests in several cultures (i.e., China, Greece, UK, US). Furthermore, we were able to replicate the mediation model using the prototype-based manipulation of nostalgia (Experiment 2), thus avoiding potential demand characteristics that could stem from the use of the term “nostalgia.” In all, the mediation model has been consistently supported in four studies in prior research (Sedikides et al., 2016) and in two studies in the present research. This is strong evidence that nostalgia brings about self-continuity via social connectedness.

### ***Implications***

Social connectedness has been established as a mediator of nostalgia’s effect on self-continuity, both in the current research and in prior work (Sedikides et al., 2016). However, in all studies social connectedness was measured, with one exception. Sedikides et al. (2016, Experiment 4) demonstrated that social connectedness causes self-continuity (Experiment 4). Future research will need to test the replicability of this causal relation.

Nostalgia may augment self-continuity via social connectedness, but what are the downstream implications of this pattern? Van Tilburg et al. (2019) considered meaning in life as one such implication. This construct is defined as the sense that one’s life is predictable, purposeful, and significant (King, Heintzelman, & Ward, 2016). In a series of studies, Van Tilburg et al. (2019) demonstrated that nostalgia fosters social connectedness, which augments self-continuity, which in turn engenders meaning in life. Future research could extend this mediational sequence by examining whether meaning in life is subsequently linked to psychological benefits such as subjective well-being (hedonic or eudaimonic; Waterman, 1993) or the pursuit of one’s important goals (Sedikides et al., 2018).

Given such potentially beneficial downstream implications, one would encourage

interventions in which nostalgia were induced (e.g., daily), expecting for self-continuity to be augmented via social connectedness. There may be cases, though, where such interventions are controversial. Vacation is one such case. Here, nostalgia would augment self-continuity, but it is possible that vacationers desire a break from work, that is, they desire self-discontinuity (Etzion, 2003; Fritz & Sonnentag, 2006). Bereavement is another case. Here, the bereaved experience brings self-discontinuity (Sedikides et al., 2008). Arguably, adjusting to self-discontinuity is less demanding (and more constructive) for them, at least in the early post-bereavement stages, than seeking self-continuity, which can be psychologically aversive (Abakoumkin et al., 2007; Stroebe, Gergen, Gergen, & Stroebe, 1992; see also: Stroebe, Abakoumkin, Stroebe, & Schut, 2012).

### ***Limitations***

Two limitations of the present research might be addressed by future investigations. First, whereas we extended prior findings by testing the mediation in another culture, we did so by using a predominantly female sample. Future studies might use demographically more balanced samples. Second, although there were no differences in nostalgia between the control conditions of Experiment 1, there were differences in social connectedness and self-continuity. We offered an explanation for these differences, that is, the level of specificity of an event might be linked to social connectedness and self-continuity. This explanation needs to be empirically tested. More generally, such differences might indicate that nostalgia induction by means of autobiographical recall could entail features that are related to variables of interest beyond nostalgia, like social connectedness and self-continuity in the present case. Accordingly, it is sensible to identify and control such features by implementing relevant conditions in the research design (for an example, see above presentation of Sedikides et al., 2016, Experiment 3).

### ***Conclusion***

Two experiments bolstered and extended prior findings. The experiments established that nostalgia augments self-continuity. More importantly, they affirmed that nostalgia augments self-continuity by fostering social connectedness.

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