Hong, E. K., Sedikides, C., & Wildschut, T. (2020). Nostalgia strengthens global self-continuity through holistic thinking. *Cognition and Emotion*. https://doi.org/10.1080/02699931.2020.1862064

**Nostalgia Strengthens Global Self-Continuity Through Holistic Thinking**

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**Abstract**

Nostalgia, a sentimental longing for one’s meaningful past, promotes global self-continuity (GSC), a sense of connection among one’s past, present, and future selves. We identified a cognitive mechanism for this effect: holistic thinking, and in particular interactional causality (presupposing multiple causes that interact to influence an object’s behaviour). In three studies, using measurement-of-mediation and experimental-causal-chain designs, nostalgia was related to, and caused, higher GSC through interactional causality. In cross-sectional Study 1, trait nostalgia was associated with GSC via interactional causality. In Study 2, induced nostalgia led to higher interactional causality and ensuing GSC. In Study 3, manipulated interactional causal thinking increased GSC.

*Keywords*: nostalgia, global self-continuity, holistic thinking, interactional causality

**Nostalgia Strengthens Global Self-Continuity Through Holistic Thinking**
The sociologist Fred Davis (1979) was the first to propose that nostalgic reverie plays a role in connecting temporally distinct aspects of the self. His proposal has stood the test of time. Yet, the cognitive mechanisms underlying this effect are not well-understood. We address, in three studies, a plausible mechanism: holistic thinking.

**Nostalgia and Self-Continuity**

Nostalgia refers to sentimental longing about aspects of one’s past. When nostalgising, one typically brings to mind memories of momentous events (e.g., birthday celebrations, graduations, anniversaries) or close others (e.g., family, friends, partners) from their life (Wildschut et al., 2006). One feels warm, tender, and even joyous, but also a tinge of longing for the bygone times; nostalgia, then, is an ambivalent, albeit mostly positive, emotion (Sedikides & Wildshut, 2016). It is also a self-relevant emotion, given that the events are autobiographical, meaningful, and narrated from a first-person perspective. Lastly, it is a social emotion, because, in nostalgic accounts, close others act as a supportive cast to the protagonistic self (Sedikides & Wildshut, 2019).

Self-continuity has often been defined as a sense of connection between one’s past and present selves (Chandler et al., 2003; Sedikides et al., 2015a). However, past-to-present self-continuity is positively associated with present-to-future self-continuity (i.e., sense of connection between one’s present and future selves; Sokol & Eisenheim, 2016). Indeed, an expanded definition of the construct, what we call global self-continuity (GSC), has been gaining traction in the literature (Becker et al., 2018; Vignoles et al., 2006).

 GSC, a sense of connection among one’s past, present, and future selves, entails psychological benefits. For example, it is linked to positive affect, life satisfaction, and adaptive coping (Sadeh & Karniol, 2012; Sokol & Serper, 2019). Given GSC’s benefits, research has begun to address its correlates and triggers.[[1]](#footnote-1) One such correlate and trigger is nostalgia (Hong et al., 2020), an emotion that is both past-oriented (Wildschut et al., 2006) and entails implications for one’s future (Sedikides & Wildschut, 2020). In this article, we were also concerned with nostalgia as a correlate and trigger of GSC. Additionally, we tested a cognitive mechanism likely to transmit the effect of nostalgia on GSC: holistic thinking.

**Nostalgia, Holistic Thinking, and Global Self-Continuity**

***Nostalgia and Global Self-Continuity***

Nostalgia, as a low arousal and mostly positive emotion (Van Tilburg et al., 2018), may engender a broader outlook on one’s life (Fredrickson, 2001), enabling the individual to link their past, present, and future. That is, nostalgia may bridge past and present, making the past feel subjectively closer to the present (past-present self-continuity), and may bridge present and future, making the future also feel closer to the present (present-future self-continuity). Indeed, in a series of studies, Hong et al. (2020) found that nostalgia was positively associated with GSC and also increased GCS. We expected to replicate these results.

***Holistic Thinking as a Mediator of the Effect of Nostalgia on Global Self-Continuity***

Holistic (as opposed to analytic) thinking involves the propensity toward seeing objects as interconnected rather than isolated (Nisbett et al., 2001). This thinking style has four components (Choi et al., 2007). One is *interactional causality*, which presupposes the presence of multiple causes that interact to influence an object’s behaviour. Another is *dialectical attitude toward contradiction*, which advocates a dialectical approach or middle-ground compromise in which even opposite propositions can co-exist as true. The third component is *cyclic perception of change*, which assumes a dynamic, rather than static, state among causes of an object’s behaviour. The fourth component is *field-oriented locus of attention*, according to which attention is oriented toward the relation between an object and the field in which it is embedded, rather than the object alone.

We propose that holistic thinking transmits the effect of nostalgia on GSC. When nostalgising, the person does not reflect on the relevant event solely, but instead considers close others and the way they relate, or will relate, to the self (Sedikides & Wildschut, 2019, 2020). The person searches for meaning or causal patterns (Sedikides & Wildschut, 2018). Indeed, nostalgic (vs. control) accounts comprise a greater number of causal words (e.g., because, effect, hence; Stephan et al., 2012), signifying a search for interconnections. Through mental time travel, then, the person looks for causes of their past behaviour and how their present behaviour may shape the future.

Although our rationale appears to favour interactional causality at the expense of the other three holistic thinking components, we did not tie at the outset our mediational hypothesis to interactional causality. It is possible that nostalgizing engenders a propensity toward harmonizing conflicting elements of one’s past (dialectical attitude toward contradiction), a dynamically evolving pattern of causal accounts where the next account complements and even reverses the previous one (cyclic perception of change), or the orientation of one’s attention toward the context rather than objects—self and close others— within the context (field-oriented locus of attention).

**Overview**

We tested the hypotheses that nostalgia is associated with or leads to GSC, and holistic thinking mediates the effect of nostalgia on GSC, in three studies combining measurement-of-mediation and experimental-causal-chain designs (Spencer et al., 2005). Additionally, we explored which of the four holistic thinking components, if any, is mostly affected by nostalgia or carries the putative mediation.

We approached these constructs at the trait (Study 1) and state (Studies 2-3) level, as a way to increase the generalizability of the findings. A trait is one’s base-rate proclivity toward (or away from) a set of cognitions, emotions, or behaviours, whereas a state is represents a set of cognitions, emotions, or behaviours in a particular situation (Fleeson, 2001). Further, states are experienced (“If a person is in a state he or she must be able to feel it;” Fridhandler, 1986, p. 170), are shorter-lived, and manifest continuously relative to traits, which are less homogenous across time (Fridhandler, 1986).

In Study 1, we assessed trait nostalgia, holistic thinking, and GSC. In Study 2, we manipulated nostalgia and measured holistic thinking and GSC. In Study 3, we manipulated interactional causality, which by then had emerged as the key component of holistic thinking, and measured GSC. We obtained ethical approval from University of Southampton and provide the research protocol in Supplemental Material.

**Study 1**

In Study 1, we examined whether trait nostalgia is associated with higher trait GSC through trait holistic thinking.

**Method**

***Participants***

We tested 252 paid undergraduates from various Canadian universities (178 women, 67 men, 7 other) aged 18-54 years (*M*age = 24.00, *SD*age = 6.05). Our recruitment target was 250 participants (Schönbrodt & Perugini, 2013).

***Materials and Procedure***

Participants completed the 7-item Southampton Nostalgia Scale (Sedikides et al., 2015b), a measure of trait nostalgia. Four items assess propensity to nostalgising (e.g., “How prone are you to feeling nostalgic”; 1 = *not at all*, 7 = *very much*) or frequency of it (e.g., “Generally speaking, how often do you bring to mind nostalgic experiences?”; 1 = *very rarely*, 7 = *very frequently*). The remaining three items assess whether participants consider nostalgia valuable, important, or significant (1 = *not at all*, 7 = *very much*). We averaged responses to create a nostalgia index (*M* = 4.77, *SD* = 1.23, alpha = .93).

Then, participants completed the 24-item Analysis-Holism Scale (Choi et al., 2007; 1 = *strongly disagree*, 7 = *strongly agree*; *M* = 4.80, *SD* = 0.50, alpha = .73), with higher scores indicating greater holistic thinking. The scale comprises four subscales, six items each: *causality* (*M* = 5.02, *SD* = 0.92, alpha = .78; e.g., “Everything in the universe is somehow related to each other”), *attitude toward contradiction* (*M* = 4.76, *SD* = 0.94, alpha = .74; e.g., “It is more desirable to take the middle ground than go to extremes”), *perception of change* (*M* = 4.87, *SD* = 0.91, alpha = .78; e.g., “Current situations can change at any time”), and *locus of attention* (*M* = 4.55, *SD* = 1.01, alpha = .83; e.g., “The whole, rather than its parts, should be considered in order to understand a phenomenon”). Higher subscale scores indicate interactional (than dispositional) causality, dialectical (than analytical) attitude toward contradiction, cyclic (than linear) perception of change, and field-oriented (than part-oriented) locus of attention.

Afterward, participants completed a measure of GSC (Becker et al., 2018; Hong et al., 2020). They listed seven identities that best represented who they were, and rated whether they regarded each identity as continuous (“To what extent does [each identity] make you feel that your past, present, and future are connected?”; 0 = *not at all*, 10 = *very much*). We averaged responses to create a GSC score (*M* = 7.74, *SD* = 1.35, alpha = .71).[[2]](#footnote-2)

**Result and Discussion**

***Preliminary Analysis***

We present correlations among study variables in Table 1. Nostalgia was unassociated with holistic thinking (full scale), but holistic thinking was positively associated with GSC. Further, nostalgia was positively associated with causality and GSC, but not with attitude toward contradiction, perception of change, and locus of attention; causality and attitude toward contradiction were also positively associated with GSC, but perception of change and locus of attention were not.

***Mediation Analysis***

We used Hayes’ (2013) Process macro (Model 4) to conduct a mediation analysis based on 10,000 bootstrap samples, using holistic thinking (full scale) as mediator first. Nostalgia was unrelated to holistic thinking, *B* = 0.04, *SE* = 0.03, *t* = 1.45, *p* = .148. The direct effect of nostalgia on GSC was significant, *B* = 0.18, *SE* = 0.07, *t* = 2.66, *p* = .008. Controlling for nostalgia, holistic thinking was positively related to GSC, *B* = 0.34, *SE* = 0.17, *t* = 2.05, *p* = .041. There was no significant indirect effect (denoted as *ab*) through holistic thinking, *ab* = 0.01, *SE* = 0.01, 95% confidence interval (CI) = [-0.006, 0.038].

We proceeded with a parallel mediation analysis—including simultaneously all four components—to explore whether the association between nostalgia and GSC was mediated by the components of holistic thinking. Nostalgia was positively associated with causality, but no other component (a paths, Table 2). The direct effect of nostalgia on GSC (controlling for the four putative mediators) was not significant (c′ path, Table 2). Controlling for nostalgia, causality and attitude toward contradiction were positively related to GSC, perception of change was unrelated to it, and locus of attention was negatively related to it (b paths, Table 2). Lastly, a significant indirect effect emerged through causality, *ab* = 0.05, *SE* = 0.02, 95% CI = [0.012, 0.091], but not through attitude toward contradiction, *ab* = 0.02, *SE* = 0.02, 95% CI = [-0.007, 0.053], perception of change, *ab* = -0.002, *SE* = 0.01, 95% CI = [-0.023, 0.021], or locus of attention, *ab* = 0.01, *SE* = 0.01, 95% CI = [-0.014, 0.039]. The association between nostalgia and GSC was mediated only by causality.

**Study 2**

In Study 2, we examined whether experimentally induced nostalgia elevates GSC via state holistic thinking, and especially state interactional causality (Spencer et al., 2005).

**Method**

***Participants***

We recruited 176 participants (119 women, 55 men, 2 other), aged 21-65 years (*M*age = 35.64, *SD*age = 11.10), from Prolific Academic. Based on relevant research (Sedikides et al., 2015a, Study 3), we aimed to recruit at least 128 participants to achieve a medium effect (*f* = .25) with power (1- β) = .80 at alpha = .05 (two-tailed). We randomly assigned participants to the nostalgia (*n* = 89) or control (*n* = 87) condition.

***Materials and Procedure***

We manipulated nostalgia with the Event Reflection Task (Sedikides et al., 2015b). Participants in the nostalgia condition recalled a nostalgic event, described as “feeling sentimental about a fond and valued memory from one’s personal past,” listed four pertinent keywords, and wrote about how it made them feel. Participants in the control condition recalled a “past event that is ordinary, normal, and everyday—that is, events that [they] experience on a regular basis,” listed four pertinent keywords, and wrote how it made them feel. Then, all participants completed a 3-item manipulation check (Hepper et al., 2012). Sample item: “Right now, I am feeling quite nostalgic” (1 = *strongly disagree*, 7 = *strongly agree*; *M* = 4.92, *SD* = 2.02, alpha = .96).

Subsequently, given our interest in state GSC, and thus in effects of brief duration, we measured holistic thinking with an abbreviated version of the Analysis-Holism Scale (1 = *strongly disagree*, 7 = *strongly agree*; *M* = 4.24, *SD* = 0.60, alpha = .77). We selected three items for each subscale based on the corrected item-total correlation from Study 1.[[3]](#footnote-3) Sample items are: “Everything in the universe is somehow related to each other” (causality; *M* = 3.65, *SD* = 1.42, alpha = .83), “It is more desirable to take the middle ground than go to extremes” (attitude toward contradiction; *M* = 4.66, *SD* = 1.10, alpha = .57), “A person who is currently living a successful life will continue to stay successful” (perception of change; *M* = 4.47, *SD* = 1.25, alpha = .76), and “The whole, rather than its parts, should be considered in order to understand a phenomenon” (locus of attention; *M* = 4.18, *SD* = 1.27, alpha = .82).

Finally, we assessed GSC by slightly adjusting the 4-item state self-continuity scale (Sedikides et al., 2016) to reflect not just past-present self-continuity, but GSC. Sample item: “I feel connected to who I was in the past and who I will be in the future” (1 = *not at all*, 7 = *very much*; *M* = 4.60, *SD* = 1.50, alpha = .89).

**Results and Discussion**

***Preliminary Analysis***

**Correlations.** We present correlations among study variables in Table 3. Holistic thinking (full scale) was positively associated with GSC. Causality was positively associated with GSC. Neither attitude toward contradiction, perception of change, nor locus of attention were linked to GSC.

**Manipulation Check.** Participants in the nostalgia condition (*M* = 5.94, *SD* = 1.56) felt more nostalgic than controls (*M* = 3.88, *SD* = 1.90), *F*(1, 174) = 62.21, *p* < .001, ηp2 = .263. The manipulation was effective.

**Effect of Nostalgia on Holistic Thinking.** Nostalgic participants (*M* = 4.33, *SD* = 0.53) reported higher holistic thinking (full scale) than controls (*M* = 4.14, *SD* = 0.64), *F*(1, 174) = 5.28, *p* = .023, ηp2 = .029. Also, nostalgic participants (*M* = 3.86, *SD* = 1.38) reported higher causality than controls (*M* = 3.43, *SD* = 1.42), *F*(1, 174) = 4.12, *p* = .042, ηp2 = .023. However, nostalgia did not impact significantly: attitude toward contradiction (*M*Nostalgia = 4.82, *SD*Nostalgia = 1.01, *M*Control = 4.49, *SD*Control *=* 1.17), *F*(1, 174) = 3.84, *p* = .052, ηp2 = .022; perception of change (*M*Nostalgia = 4.37, *SD*Nostalgia = 1.32, *M*Control = 4.56, *SD*Control *=* 1.19), *F*(1, 174) = 1.00, *p* = .320, ηp2 = .006; or locus of attention (*M*Nostalgia = 4.30, *SD*Nostalgia = 1.23, *M*Control = 4.05, *SD*Control *=* 1.31), *F*(1, 174) = 1.71, *p* = .193, ηp2 = .010.

**Effect of Nostalgia on State GSC.** Nostalgic participants (*M* = 4.96, *SD* = 1.37) reported higher state GSC than controls (*M* = 4.23, *SD* = 1.56), *F*(1, 174) = 10.89, *p* = .001, ηp2 = .059.

***Mediation Analysis***

We used Hayes’ (2013) Process Macro (Model 4) to conduct a mediation analysis (10,000 bootstrap samples). Nostalgia led to higher holistic thinking, *B* = 0.20, *SE* = 0.09, *t* = 2.30, *p* = .023. The direct effect of nostalgia on GSC was significant, *B* = 0.64, *SE* = 0.22, *t* = 2.90, *p* = .004. Controlling for nostalgia, holistic thinking was positively related to GSC, *B* = 0.42, *SE* = 0.19, *t* = 2.25, *p* = .026. Despite the joint significance of the *a* (i.e., nostalgia to holistic thinking) and *b* (i.e., holistic thinking to GSC) paths, which is essential for establishing mediation (Yzerbyt et al., 2018), the index of indirect effect did not reach significance, *ab* = 0.09, *SE* = 0.06, 95% CI = [-0.005, 0.235].

We next tested whether nostalgia increased GSC through components of holistic thinking, with an emphasis on causality (controlling for the other three components). Indeed, nostalgia increased causality, but not attitude toward contradiction, perception of change, or locus of attention (a paths, Table 2). Contrary to Study 1, the direct effect of nostalgia on GSC (controlling for the mediators) was significant (c′ path, Table 2). Additionally, controlling for nostalgia, causality and locus of attention were positively associated with GSC, whereas perception of change and locus of attention were not (b paths, Table 2). Consistent with Study 1, a significant indirect effect emerged through causality, *ab* = 0.17, *SE* = 0.09, 95% CI = [0.003, 0.359], but not through attitude toward contradiction, *ab* = 0.02, *SE* = 0.05, 95% CI = [-0.074, 0.116], perception of change, *ab* = 0.02, *SE* = 0.03, 95% CI = [-0.024, 0.106], or locus of attention, *ab* = -0.05, *SE* = 0.05, 95% CI = [-0.172, 0.028].

**Study 3**

In Study 3, we manipulated the emerging mediator, causality, and measured state GSC (Spencer et al., 2005).

**Method**

***Participants***

We recruited 180 participants (118 women, 62 men), aged 18-69 years (*M*age = 35.02, *SD*age = 12.15), from Prolific Academic. Based on relevant research (Ma-Kellams et al., 2012, Study 5), we estimated a medium effect (*f* = .25) with power (1- β) = .80 at alpha = .05 (two-tailed), aiming to recruit a minimum of 128 participants. We randomly assigned participants to the interactional causality (*n* = 85) or control (*n* = 95) condition.

***Materials and Procedure***

We manipulated causality by adapting a procedure introduced by Ma-Kellams et al. (2010, Study 3). Participants read one of two articles purportedly published in a scientific journal (*ScienceNow*). In the interactional causality condition, the article suggested that “events are bounded in complex cause-and-effect relations.” It elaborated: “there exists intertwined and interconnected cause-and-effect relationships behind all things happening around us across time, and this notion helps them make sense of everyday life.” Therefore, “individuals who, during problem-solving, consider relevant information about other tasks (rather than simply focusing on the task at hand) perform better, receive higher favorability ratings from their peers, and demonstrate greater overall psychological well-being.” In the control (dispositional causality) condition, the article suggested that “events operate, to a great degree, independently of each other.” It elaborated: “almost all things happening around us across time, are largely independent and isolated from each other (i.e., have their own substance), and this notion helps them make sense of everyday life.” Therefore, “individuals who, during problem solving, only focus on the task at hand (rather than seeking relevant information about other tasks) perform better, receive higher favorability ratings from their peers, and demonstrate greater overall psychological well-being.” Subsequently, participants wrote about a personal experience that supported the argument they read.

Then, we administered a 2-item manipulation check: “Events cause each other” and “Events seem to have their own separate entity [reverse-coded]” (1 = *strongly disagree*, 7 = *strongly agree*; *M* = 4.71, *SD* = 1.56, *r* = .605). Lastly, we assessed state GSC as in Study 2 (*M* = 4.94, *SD* = 1.24, alpha = .80).

**Results and Discussion**

Participants in the interactional causality condition (*M* = 5.54, *SD* = 1.00) endorsed greater causality than controls (*M* = 3.96, *SD* = 1.59), *F*(1, 176) = 61.61, *p* < .001, ηp2 = .257. The manipulation check was effective. Importantly, participants in the interactional causality condition (*M* = 5.28, *SD* = 1.09) reported higher GSC than controls (*M* = 4.64, *SD* = 1.30), *F*(1, 176) = 12.49, *p* < .001, ηp2 = .066.

**General Discussion**

We accomplished two objectives in this research. First, we established a link between nostalgia and GSC, replicating Hong et al. (2020). In Study 1, we used the same GSC measure as Hong et al. (2020), and, in Studies 2-3, we used an alternative measure (after Sedikides et al., 2016), thus expanding the scope of the construct. Second, we identified an aspect of holistic thinking, interactional causality, as a plausible mechanism through which nostalgia is associated with, or increases, GSC.

The findings highlight the relevance of nostalgia for GSC, a construct associated with life satisfaction, positive affect, and adaptive coping (Sadeh & Karniol, 2012; Sokol & Serper, 2019). Further, the findings identify nostalgia as a key antecedent of that construct. Lastly, the findings have practical implications. Given that GSC is a marker of psychological health, nostalgia can be implemented to boost GSC.

Our research has limitations. First, in Study 1, we used a cross-sectional design to assess mediation (Maxwell & Cole, 2007). Yet, this mediational design was informative, because it placed the theory at risk (Fiedler et al., 2011). Regardless, our experimental-causal-chain design (Spencer et al., 2005) in subsequent studies addressed the limitations of Study 1’s cross-sectional, measurement-of-mediation approach. Second, in Study 2, our measure of GSC had not been previously validated. We take comfort in the results of Study 2 supporting our hypotheses (as well as replicating those of Study 1 and being compatible with those of Study 3), and thereby corroborating the construct validity of the GSC measure (Cronbach & Meehl, 1954). Third, one may question the conceptual independence of our two key constructs, interactional causality and GSC. Their intercorrelations, though, were low-to-moderate (.218 in Study 1, .377 in Study 2 after partialling out condition), indicating that, despite their reliable overlap, the constructs were conceptually distinct. Finally, Hong et al. (2020) identified another mechanism underlying the relation between nostalgia and global self-continuity, narrative identity. Chandler et al. (2003) drew a distinction between essentialism and narrativism. Essentialism advocates qualities in a person that are immutable and resistant to change, whereas narrativism advocates qualities that follow from each other or are interlinked. It is possible that nostalgic accounts reinforce a narrative perspective, which in turn galvanises a focus on interactional causality. Follow-up research could test a serial mediation model, where nostalgia strengthens narrativism, which subsequently fortifies interactional causality in promoting GSC.

Nostalgic reverie, as Davis (1979) argued, assists in connecting temporally distinct self-aspects. It partly does so by bolstering thinking of how they causally interact over time.

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**Funding Details**

The authors received no funding for this research.

**Disclosure Statement**

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

**Data Availability Statement**

The data that support the findings of this study are available from the corresponding author upon request.

**SUPPLEMENTAL MATERIAL**

**Nostalgia Strengthens Holistic Thinking Through Global Self-Continuity**

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University of Southampton

Appendix

**STUDY 1**

**Southampton Nostalgia Scale (Sedikides et al., 2015b)**

According to the Oxford Dictionary, ‘nostalgia’ is defined as a ‘sentimental longing for the past.’

1. How valuable is nostalgia for you?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Not at all |  |  |  |  |  | Very much |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

2. How important is it for you to bring to mind nostalgic experiences?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Not at all |  |  |  |  |  | Very much |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

3. How significant is it for you to feel nostalgic?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Not at all |  |  |  |  |  | Very much |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

4. How prone are you to feeling nostalgic?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Not at all |  |  |  |  |  | Very much |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

5. How often do you experience nostalgia?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Not at all |  |  |  |  |  | Very much |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

6. Generally speaking, how often do you bring to mind nostalgic experiences?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Not at all |  |  |  |  |  | Very much |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

7. Specifically, how often do you bring to mind nostalgic experiences? (Please check one.)

\_\_\_\_\_ Once or twice a year

\_\_\_\_\_ Once every couple of months

\_\_\_\_\_ Once or twice a month

\_\_\_\_\_ Approximately once a week

\_\_\_\_\_ Approximately twice a week

\_\_\_\_\_ Three to four times a week

\_\_\_\_\_ At least once a day

**Analysis-Holism Scale (Choi et al., 2007); also used in Study 2**

Instruction: Please indicate how much you agree or disagree with each of the statements in the given scale below. (1 = *strongly disagree,* 7 = *strongly agree*)

***Causality***

1. Everything in the universe is somehow related to each other.
2. Nothing is unrelated.
3. Everything in the world is intertwined in a causal relationship.
4. Even a small change in any element of the universe can lead to significant alterations in other elements.
5. Any phenomenon has numerous numbers of causes, although some of the causes are not known.
6. Any phenomenon entails a numerous number of consequences, although some of them may not be known.

***Attitude Toward Contradictions***

1. It is more desirable to take the middle ground than go to extremes.
2. When disagreement exists among people, they should search for ways to compromise and embrace everyone’s opinions.
3. It is more important to find a point of compromise than to debate who is right/wrong, when one’s opinions conflict with other’s opinions.
4. It is desirable to be in harmony, rather than in discord, with others of different opinions than one’s own.
5. Choosing a middle ground in an argument should be avoided.
6. We should avoid going to extremes.

***Perception of Change***

1. Every phenomenon in the world moves in predictable directions.
2. A person who is currently living a successful life will continue to stay successful.
3. An individual who is currently honest will stay honest in the future.
4. If an event is moving toward a certain direction, it will continue to move toward that direction.
5. Current situations can change at any time.
6. Future events are predictable based on present situations.

***Locus of Attention***

1. The whole, rather than its parts, should be considered in order to understand a phenomenon.
2. It is more important to pay attention to the whole than its parts.
3. The whole is greater than the sum of its parts.
4. It is more important to pay attention to the whole context rather than the details.
5. It is not possible to understand the parts without considering the whole picture.
6. We should consider the situation a person is faced with, as well as his/her personality, in order to understand one’s behavior.

**Becker et al. (2018) Self-Continuity Scale**

In the spaces below, please write down 7 things about yourself. You can write your answers as they occur to you without worrying about the order, but together they should summarize the image you have of who you are. You can write anything you think describes you well. Your answers might include social groups or categories you belong to, personal relationships with others, as well as characteristics of yourself as an individual. Some may be things that other people know about, others may be your private thoughts about yourself. Some things you may see as relatively important, and others less so. Some may be things you are relatively happy about, and others less so.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

To what extent does each of these things make you feel that your past, present, and future are connected?

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Not****at all** |  |  |  |  |  |  |  |  |  | **Very much** |
| **A.** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **B.** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **C.** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **D.** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **E.** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **F.** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **G.** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**STUDY 2**

**Event Reflection Task (Sedikides et al., 2015b)**

***Nostalgia Condition***

Nostalgia is defined as “a sentimental longing for one’s past or as feeling sentimental about a fond and valued memory from one’s personal past (e.g., childhood, close relationships, significant events).” Now, please think of a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic. Bring this nostalgic experience to mind. Immerse yourself in this nostalgic experience for up to two minutes, and think about how it makes you feel.

Please write down four keywords relevant to this nostalgic event (i.e., words that describe the nostalgic experience).

Keywords that describe my nostalgic experience:

(Next page)

Using the space provided below, we would now like you to write about your nostalgic memory for up to five minutes. Immerse yourself into the thoughts and feelings associated with this memory. Describe this nostalgic memory and how it makes you feel. Be as thorough as possible in describing how you are feeling.

***Control Condition***

Please think of an ordinary event in your life. Specifically, try to think of a past event that is ordinary, normal, and everyday—that is, like events that you experience on a regular basis (e.g., getting on a bus, shopping at the supermarket, watching television). Bring this ordinary event to mind, immerse yourself in it for up to two minutes, and think about how it makes you feel.

Please write down four keywords relevant to this ordinary event (i.e., words that describe the ordinary experience).

Keywords that describe my ordinary experience:

(Next page)

Using the space provided below, we would now like you to write about the ordinary, normal, and everyday event for up to five minutes. Immerse yourself into the thoughts and feelings associated with this memory. Describe this ordinary event and how it makes you feel. Be as thorough as possible in describing how you are feeling.

**Manipulation Check**

The following statements refer to how you feel right now. Please indicate your agreement or disagreement by placing a number in the blank space preceding each statement. The number should be anywhere from 1 to 7, according to the following scale:

1 = strongly disagree

2 = moderately disagree

3 = slightly disagree

4 = neither disagree nor agree

5 = slightly agree

6 = moderately agree

7 = strongly agree

\_\_\_ Right now, I am feeling quite nostalgic.

\_\_\_ Right now, I am having nostalgic feelings.

\_\_\_ I feel nostalgic at the moment.

**State Global Self-Continuity Scale (adjusted from Sedikides et al., 2016); also used in Study 3**

Please indicate the extent to which you disagree or agree with each of the statements below.

(1 = *not at all*, 7 = *very much*)

Thinking about this [nostalgic / ordinary] event makes me…

1. connected to my past and future selves.
2. connected to who I was in the past and who I will be in the future.
3. important parts of myself remain the same across time.
4. there is continuity in my life—from past to future.

**STUDY 3**

**[*Interactional Causality Condition*]**

 **Aristotle Was Right: On the Primacy of Causal Thinking**

By Jonathan Inger
ScienceNOW Daily News, February 16th, 2020
Vol. 311. no. 5766, p. 1341
DOI: 10.1126/science.311.5766.1341f
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How do we understand events? How much information do we need to consider to understand events (and, by implication, the things or tasks we do across time)? More than 2,300 years since the time of Aristotle—one of the most influential thinkers in intellectual history—this question is still unanswered. New research in the field of experimental psychology is proving that causal thinking, based substantially on the rational foundations of Aristotelian reasoning, is our best bet after all: Events are bounded in complex cause-and-effect relationships.

Based on Aristotle’s logic, five key laws ground reality:

1. Everything in the universe is somehow related to each other (**law of relation**).
2. Everything in the world is intertwined in a causal relationship (**law of causality**).
3. Even a small change in any element of the universe can lead to significant alterations in other elements (**law of impact**).
4. Any phenomenon has numerous causes, although some of the causes are not known (**law of cause**).
5. Any phenomenon entails numerous consequences, although some of them may not be known (**law of consequence**).

Now, a comprehensive series of psychological experiments has demonstrated that causal thinking is not only universal, but also functional. Individuals across the globe appear to subscribe to the notion that there are intertwined and interconnected cause-and-effect relationships behind all things happening around us across time, and this notion helps them make sense of everyday life.

Currently, researchers across the world are examining the implications of such a paradigm shift in our conceptions of what is reasonable, logical, and functional. Recent cumulative findings indicate that individuals who, during problem-solving, consider relevant information about other tasks (rather than simply focusing on the task at hand) perform better, receive higher favorability ratings from their peers, and demonstrate greater overall psychological well-being.

This is a very important finding. Philosophers have suspected this for centuries, but only now have we found empirical support for the idea that “everything is causally related.” This principle has a crucial impact on the way we should function on a day-to-day level.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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In the space below, take a few minutes to write a short essay that documents the principle “*the universe is* *bounded in complex cause-and-effect relationships*” (or that documents any of the five Aristotelian laws cited in the article). Your essay should summarize personal experience, that is, events you have been through. How did your personal experience support this principle or any of the Aristotelian laws?

**[*Control (Dispositional Causality) Condition*]**

 **Aristotle Was Right: On the Primacy of Solipsistic Thinking**

By Jonathan Inger
ScienceNOW Daily News, February 16th, 2020

Vol. 311. no. 5766, p. 1341
DOI: 10.1126/science.311.5766.1341f

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How do we understand events? How much information do we need to consider to understand events (and, by implication, the things or tasks we do across time)? More than 2,300 years since the time of Aristotle—one of the most influential thinkers in intellectual history—this question is still unanswered. New research in the field of experimental psychology is proving that solipsistic (i.e., non-causal) thinking, based substantially on the rational foundations of Aristotelian reasoning, is our best bet after all: Events operate, to a great degree, independently of each other.

Based on Aristotle’s logic, five key laws ground reality:

1. The universe consists of elements isolated from each other (**law of isolation**).
2. Everything in the world operates independently from other events (**law of non-causality**).
3. A change in any element of the universe will not necessarily lead to an alteration in other elements (**law of tangentiality**).
4. Any phenomenon has one known cause (**law of causal singularity**).
5. Any phenomenon entails one known consequences (**law of consequential singularity**).

Now, a comprehensive series of psychological experiments has demonstrated that this singular or non-causal thinking is not only universal, but also functional. Individuals across the globe appear to subscribe to the notion that almost all things happening around us across time, are largely independent and isolated from each other (i.e., have their own substance), and this notion helps them make sense of everyday life.

Currently, researchers across the world are examining the implications of such a paradigm shift in our conceptions of what is reasonable, logical, and functional. Recent cumulative findings indicate that individuals who, during problem solving, only focus on the task at hand (rather than seeking relevant information about other tasks) perform better, receive higher favorability ratings from their peers, and demonstrate greater overall psychological well-being.

This a very important finding. Philosophers have suspected this for centuries, but only now have we found empirical support for the idea that “events operate in relative isolation from each other.” This principle has a crucial impact on the way we should function on a day-to-day level.

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In the space below, take a few minutes to write a short essay that documents the principle “*events operate, to a great degree, independently of each other*” (or that documents any of the five Aristotelian laws cited in the article). Your essay should summarize personal experience, that is, events you have been through. How did your personal experience support this principle or any of the Aristotelian laws?

**Manipulation check**

Please indicate the extent to which you disagree or agree with each statement below.

(1 = *strongly disagree*, 7 = *strongly agree*)

1. Events cause each other.
2. Events seem to have their own separate entity.

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1. Self-continuity—connection between one’s past and present selves—is also positively associated with psychological benefits; further, nostalgia is associated with, or triggers, self-continuity (Sedikides et al., 2015a, 2016).

 [↑](#footnote-ref-1)
2. Hong et al. (2020, Study 1) reported an alpha of .79 for the same scale.

 [↑](#footnote-ref-2)
3. In Choi et al. (2007, Table 1), causality included items 1 (*r*=.617), 2 (*r*=.591), 3 (*r*=.592), 4 (*r*=.543), 5 (*r*=.529), and 6 (*r*=.575). Attitude toward contradiction included items 7 (*r*=.538), 8 (*r*=.648), 9 (*r*=.613), 10 (*r*=.531), 11 (*r*=.242), and 12 (*r*=.376). Perception of change included items 13 (*r*=.476), 14 (*r*=.610), 15 (*r*=.522), 16 (*r*=.685), 17 (*r*=.242), 18 (*r*=.360). Locus of attention included items 19 (*r*=.671), 20 (*r*=.652), 21 (*r*=.628), 22 (*r*=.706), 23 (*r*=.415), and 24 (*r*=.259). The coefficients in brackets are from Study 1. We chose items 1, 2, 3, 7, 8, 9, 14, 15, 16, 19, 20, and 22. [↑](#footnote-ref-3)