



King's Research Portal

DOI:

[10.1037/a0030442](https://doi.org/10.1037/a0030442)

Document Version

Peer reviewed version

[Link to publication record in King's Research Portal](#)

Citation for published version (APA):

van Tilburg, W., Igou, E. R., & Sedikides, C. (2013). In Search of Meaningfulness: Nostalgia as an Antidote to Boredom. *EMOTION*, 13(3), 450-461. <https://doi.org/10.1037/a0030442>

Citing this paper

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

General rights

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

Take down policy

If you believe that this document breaches copyright please contact librarypure@kcl.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

In Search of Meaningfulness: Nostalgia as an Antidote to Boredom

Wijnand A. P. van Tilburg and Eric R. Igou

University of Limerick

Constantine Sedikides

University of Southampton

Wijnand A. P. van Tilburg, Department of Psychology, University of Limerick, Republic of Ireland; Eric R. Igou, Department of Psychology, University of Limerick, Republic of Ireland. Constantine Sedikides, Center for Research on Self and Identity, School of Psychology, University of Southampton, England.

This research was partially funded by a grant from the Irish Research Council for the Social Sciences and Humanities (IRCHSS). Correspondence concerning this article should be addressed to Wijnand A. P. van Tilburg, Room CS2-023, Department of Psychology, University of Limerick, Castletroy, Republic of Ireland; Phone: +353 86 7931 648; Email: Wijnand.vanTilburg@ul.ie

Abstract

We formulated, tested and supported, in six studies, a theoretical model according to which individuals use nostalgia as a way to re-inject meaningfulness in their lives when they experience boredom. Studies 1-3 established that induced boredom causes increases in nostalgia, when participants have the opportunity to revert to their past. Studies 4-5 examined search for meaning as a mediator of the effect of boredom on nostalgia. Specifically, Study 4 showed that search for meaning mediates the effect of state boredom on nostalgic memory content, whereas Study 5 demonstrated that search for meaning mediates the effect of dispositional boredom on dispositional nostalgia. Finally, Study 6 examined the meaning re-establishment potential of nostalgia during boredom: nostalgia mediates the effect of boredom on sense of meaningfulness and presence of meaning in one's life. Nostalgia counteracts the meaninglessness that individuals experience when they are bored.

KEYWORDS: Boredom, nostalgia, meaning, self-regulation, memory

In Search of Meaningfulness: Nostalgia as an Antidote to Boredom

Boredom is an unpleasant affective state that entails a sense of purposelessness (Van Tilburg & Igou, 2012a). By signaling lack of meaningful engagement, boredom initiates a search for ways to re-attain meaningfulness. Nostalgic reverie instills meaningfulness (Routledge et al., 2011) and protects the self against existential threat (Routledge, Arndt, Sedikides, & Wildschut, 2006). Nostalgia, then, may constitute a meaning-regulation strategy in the face of boredom. Although there is evidence that boredom instigates a search for meaning and that nostalgic reverie bolsters perceptions of life as meaningful, no research has linked boredom to nostalgia. We test, in six studies, the idea that nostalgic evocation of the past constitutes a meaning re-establishment strategy during boredom. We begin with a review of the boredom literature.

Boredom

Although the experience of boredom is common (Larson & Richards, 1991), the relevant literature is arguably sparse. One stream of research has focused on dispositional boredom and its personality correlates. Individuals who are easily bored are more likely than their counterparts to (a) evince job dissatisfaction and suffer from anxiety or eating disorders (Gordon, Wilkinson, McGrown, & Jovanoska, 1997; Kass, Vodanovich, & Callender, 2001; Stickney & Miltenberger, 1999), (b) be unsafe drivers (Verwey & Zaidel, 2000), (c) be at greater risk for pathological gambling (Blaszczynski, McConaghy, & Frankova, 1990), and (d) be more aggressive (Rupp & Vodanovich, 1997; Vodanovich, 2003). These findings point to an association between dispositional boredom and personal or social dysfunctionality.

Another stream of research has focused on state boredom and its causes. The findings indicate that the experience of boredom is negative and typically involves low arousal (Smith & Ellsworth, 1985), unpleasantness (Smith, Wagaman, & Handley, 2009), and disinterest (Sansone, Weir, Harpster, & Morgan, 1992). Individuals experience boredom as a result of repetition (Sansone et al., 1992), lack of involvement (Fromm, 1972/2004), lack of mental stimulation (Leong & Schneller, 1993), perceiving life as meaningless (Barbalet, 1999; Fahlman, Marcer, Gaskocski, Eastwood, & Eastwood, 2009; Frankl, 1963), or possessing more skill than needed for task completion (Csikszentmihalyi, 1990).

Boredom does not merely equate feeling negative, experiencing low arousal, or lacking challenge, interest, fun, stimulation, and meaning. Rather, boredom is a multifaceted and discrete emotional state—a statement that resonates with Leary, Rogers, Canfield, and Coe's (1986) pioneering work on the topic. The distinct emotional signature of boredom is reflected in several domains such as affect, cognition, motivation, and action tendencies (Smith & Ellsworth, 1985; Van Tilburg & Igou, 2012a; see also: Barbalet, 1999; Vodanovich, 2003; Wallbott, 1998). Bored individuals feel restless and unchallenged, think that their current situation serves no purpose, and prefer to engage in behavior that they find meaningful (Van Tilburg & Igou, 2011a).

Boredom fulfills a self-regulation function. It can motivate individuals toward turning a dull task into an interesting (Sansone et al., 1992) or fun (Smith et al., 2009) one. The experience of boredom serves as an affective cue that one's activities fail to be valuable, and boredom subsequently sparks engagement in strategies likely to alleviate this problem. Thus, boredom is implicated in the self-regulatory process whereby individuals re-orient toward a meaningful course of action (Barbalet, 1999; Van Tilburg & Igou, 2012a). We consider the meaning re-establishment property of boredom to reflect its existential function, consistent with the definition of existentialism as “a philosophy that confronts the human situation in its totality to ask what the basic conditions of human existence are and how man can establish his own meaning out of these conditions” (Barrett, 1959, p. 126; see also Pyszczynski, Greenberg, & Koole, 2004).

Finding meaning in activities or, more generally, viewing life as meaningful has beneficial consequences. It is associated, for example, with increases in work enjoyment, happiness, or life satisfaction, and with decreases in depression, anxiety, or substance abuse (Bonebright, Clay, & Ankermann, 2000; Chamberlain & Zika, 1988; Debats, Van der Lubbe, & Wezeman, 1993; Harlow, Newcomb, & Bentler, 1986; see also Steger, Frazier, Oishi, & Kaler, 2006). It is therefore no surprise that individuals seek to maintain a sense of meaningfulness (Greenberg, Koole, & Pyszczynski, 2004; Heine, Proulx, & Vohs, 2006). Past research has established that boredom triggers meaning re-establishment strategies that

pertain both to the specific activity at hand and the ensuing cognition or behavior (e.g., increased social identification and prosociality; Van Tilburg & Igou, 2011a, 2012b).

In summary, boredom is a distinct and multifaceted experience that entails a potent motivation to engage in meaningful activities and events. We propose that boredom can therefore provoke nostalgia, an important source of meaning (Routledge, Sedikides, Wildschut, & Juhl, in press; Sedikides, Wildschut, & Baden, 2004). Next, we turn to a brief review of the nostalgia literature.

Nostalgia

Historically, nostalgia has been regarded a brain disease or psychiatric disorder (Sedikides, Wildschut, Arndt, & Routledge, 2006; Sedikides, Wildschut, Gaertner, Routledge, & Arndt, 2008). Recently, however, the construct has been rehabilitated. Nostalgia is a universal emotion (Hepper, Ritchie, Sedikides, & Wildschut, 2012; Hepper et al., 2012) and is commonly felt (Boym, 2001; Hepper, Robertson, Wildschut, Sedikides, & Routledge, 2012; Wildschut, Sedikides, Arndt, & Routledge, 2006). Nostalgia is bittersweet, albeit predominantly positive; it refers to momentous occasions of one's life; and it involves the self in relation to valued others (Barrett et al., 2010; Sedikides, Wildschut, Arndt, & Routledge, 2008; Wildschut et al., 2006).

Nostalgia can be triggered by aversive stimuli or conditions, such as negative mood, loneliness, meaninglessness, or death reminders (Routledge et al., 2008; Routledge, Sedikides, Wildschut, & Juhl, in press; Wildschut et al., 2006; Zhou, Sedikides, Wildschut, & Gao, 2008). Nostalgic engagement, in turn, boosts social connectedness, self-esteem, positive affect, and, importantly, meaningfulness (Routledge et al., 2011; Routledge, Wildschut, Sedikides, Juhl, & Arndt, in press; Vess, Arndt, Routledge, Sedikides, & Wildschut, 2012; Wildschut et al., 2006; Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010; Wildschut, Sedikides, & Cordaro, 2011; Zauberman, Ratner, & Kim, 2009; Zhou et al., 2008; Zhou, Wildschut, Sedikides, Shi, & Feng, 2012). Stated otherwise, nostalgia increases belongingness, self-esteem, mood, and—most relevant to the purposes of this research—meaning (Routledge, Sedikides, Wildschut, Juhl, in press; Sedikides, Wildschut, Arndt, & Routledge, 2008; Sedikides et al., 2004).

Examples of the regulatory potential of nostalgia were provided by Zhou and colleagues (2008) and by Routledge and colleagues (Juhl, Routledge, Arndt, Sedikides, & Wildschut, 2010; Routledge et al., 2008). Zhou and colleagues (2008) showed that nostalgia promotes a sense of social connectedness, and, as a result, nostalgia counteracts the aversive effect of loneliness on perceived social support. Routledge and colleagues showed that nostalgia helps individuals to cope with reminders of their death, illustrating nostalgia's existential utility. In a similar vein, Routledge and colleagues (2011; see also Routledge, Wildschut, Sedikides, & Juhl, in press) demonstrated that individuals whose belief in a meaningful life had been threatened felt more nostalgic and perceived life as more meaningful. In summary, nostalgia is a potent self-regulatory tool in coping with existential threats and in sustaining meaning in life.

The Current Research: Nostalgia Instills Meaning when People Are Bored

Boredom signals a sense of meaninglessness and prompts a search for meaning (Van Tilburg & Igou, 2011a; 2012a). Nostalgia, set off by aversive conditions including existential threats, constitutes a source of meaning (Routledge, Sedikides, Wildschut, & Juhl, in press; Sedikides et al., 2004). Based on these findings, we propose that boredom instigates a search for meaning, and, when individuals have the opportunity to retrieve events from their past, this meaning search will engender nostalgia. Nostalgia, in turn, fosters a sense of meaningfulness and presence of meaning in one's life, which will counteract the depletion on meaningfulness signaled by boredom.

We examined this theoretical model in two steps. The first step involved an experimental approach (Wilson, Aronson, & Carlsmith, 2010). Here (Studies 1-3) we tested the causal relation between boredom and nostalgia (i.e., felt nostalgia, nostalgic memories). The second step involved a mediational approach (MacKinnon, Fairchild, & Fritz, 2007). Here we assessed whether the search for meaning mediates the effect of boredom on nostalgia (Study 4-5), and whether nostalgia mediates the effect of boredom on sense of meaningfulness and presence of meaning in life (Study 6). To the best of our knowledge, no prior research has linked boredom to nostalgia. The novel contribution of this article, then,

consists of showing that (a) boredom increases nostalgia, and (b) this effect of boredom on nostalgia is mediated by search for meaning.

In all reported studies, participants were University of Limerick undergraduate student volunteers, with the exception of Study 3 in which they were Limerick community members. We obtained no gender differences. In each of the studies, the potential for nostalgic reverie was facilitated by probing the retrieval of past events rather than assessing spontaneous nostalgia. Also, we debriefed participants at the end of the experimental procedure and rewarded them with confectionary. We will begin with an examination of the causal link between boredom and nostalgia (Studies 1-3; Wilson et al., 2010).

Study 1 and 2: Boredom Promotes Nostalgia

In Studies 1 and 2, we examined the causal connection between boredom and nostalgia. In particular, we tested the hypothesis that boredom elicits nostalgia. In both studies, we manipulated boredom and then asked participants to retrieve a memory. In Study 1, we then instructed half of our sample to retrieve an unspecified memory (i.e., past event) and the other half to retrieve a nostalgic memory (i.e., nostalgic event). We predicted that high (vs. low) boredom would spawn nostalgia when participants retrieved an unspecified memory; that is, highly bored participants would use this cognitive “elbow room” to retrieve a memory that made them feel nostalgic, whereas little bored participants would be less inclined to do so. However, this effect (i.e., difference between high and little bored participants on felt nostalgia) would be cancelled out, when participants were specifically asked to retrieve a nostalgic memory.

In Study 2, we used a different boredom manipulation task to ensure generalizability of the predicted relation between boredom and nostalgia. We also included a measure of sadness to rule out the possibility that sadness, rather than boredom, was responsible for the increase in nostalgia. That is, according to our reasoning, nostalgia is a result of boredom because boredom triggers a meaning-regulation process; nostalgia is not a result of a strategy intended to repair the sad mood that may be prompted by boredom (Cialdini, Schaller, Houlihan, Arps, Fultz, & Beaman, 1987; Sedikides, 1992, 1994). Given that nostalgia can serve as a source of positive affect (Barrett et al., 2010; Hepper, Ritchie, Sedikides, &

Wildschut, 2012, Study 7; Stephan, Sedikides, & Wildschut, 2012, Study 2; Wildschut et al., 2006; but see Zhou et al., 2012, Study 2-4), we tested whether the effect of the boring task on felt nostalgia was independent of sad mood.

Method

Participants and design. In Study 1, we randomly assigned 102 participants (60 men, 42 women; $M_{\text{age}} = 21.16$, $SD_{\text{age}} = 5.09$) to the conditions of a 2 (boredom: high vs. low) x 2 (memory: unspecified vs. nostalgic) between-subjects design. In Study 2, we randomly assigned 42 participants (24 men, 18 women; $M_{\text{age}} = 24.52$, $SD_{\text{age}} = 4.90$) to the conditions of a one-factor design (boredom: high vs. low).

Procedure and materials. In Study 1, we induced boredom with a manipulation that Van Tilburg and Igou (2012a, Study 4) introduced. Participants copied either 10 (high boredom condition) or 2 (low boredom condition) references about concrete mixtures (e.g., “Kosmatka, S. H.; Panarese, W. C. [1988]. Design and control of concrete mixtures. Skokie, IL”). We accessed these references from a Wikipedia entry. Participants then completed a task boredom manipulation check (“To what extent was the task you just completed boring?”; 1 = *not at all*, 7 = *very much*). We based the “memory retrieval” on a modification of a frequently used technique (Routledge et al., 2008; Wildschut et al., 2006; Zhou et al., 2008). Participants in the unspecified memory condition recalled a past event, listed four keywords relevant to it, and described it in writing. Participants in the nostalgic memory condition thought of a past nostalgic event, listed four relevant keywords, and described the event in writing.¹ Finally, participants completed the dependent measures, indicating the extent to which they felt nostalgic (1 = *strongly disagree*, 6 = *strongly agree*) on the following two items: “Right now, I am feeling quite nostalgic,” “Right now, I’m having nostalgic feelings” (Hart et al., 2011; Routledge et al., 2011; Wildschut et al., 2006).

In Study 2, we manipulated boredom after a procedure introduced by Van Tilburg and Igou (2011a, Study 4). Participants carefully traced a line through either 3 (low boredom condition) or 9 (high boredom condition) large spirals. Participants then completed the same task boredom manipulation check as in Study 1. Subsequently, they responded to an assessment of sad mood: “To what extent did the task you just completed make you feel

sad?" (1 = *not at all*, 7 = *very much*). Afterwards, participants retrieved an unspecified memory and completed the same measure of felt nostalgia as in Study 1.

Results

Task boredom manipulation check. We entered responses to the task boredom item into a one-way Analysis of Variance (ANOVAs), with boredom as the independent variable. In Study 1, participants in the high boredom condition ($M = 6.47$, $SD = .79$) found the task more boring than those in the low boredom condition ($M = 5.69$, $SD = 1.32$), $F(1, 98) = 12.82$, $p = .001$, $\eta^2 = .12$, and so did participants in Study 2 ($M = 4.50$, $SD = 2.00$ vs. $M = 3.32$, $SD = 1.84$), $F(1, 40) = 4.07$, $p = .05$, $\eta^2 = .09$. The manipulation was effective.

Felt nostalgia. In Study 1, we averaged responses to the two nostalgia items ($r[98] = .88$, $p = .001$) and subjected the resulting index to a two-way ANOVA. The boredom main effect was not significant (Figure 1), $F(1, 96) = 1.87$, $p = .17$, $\eta^2 = .02$. The memory main effect, however, was so: participants felt more nostalgic in the nostalgic memory condition ($M = 4.03$, $SD = 1.36$) than in the unspecified memory condition ($M = 3.49$, $SD = 1.43$), $F(1, 96) = 3.84$, $p = .05$, $\eta^2 = .04$. Crucially, the interaction was significant, $F(1, 96) = 4.29$, $p = .04$, $\eta^2 = .04$. When participants retrieved an unspecified memory, those in the high boredom condition ($M = 3.96$, $SD = 1.37$) felt more nostalgic than those in the low boredom condition ($M = 3.02$, $SD = 1.36$), $t(96) = 2.54$, $p = .01$, $d = 0.52$. In fact, participants in the low boredom condition only felt more nostalgic when prompted to retrieve a nostalgic memory ($M = 4.13$, $SD = 0.98$) relative to those who retrieved an unspecified memory ($M = 3.02$, $SD = 1.36$), $t(96) = 2.89$, $p < .01$, $d = 0.59$. However, when retrieving a nostalgic memory, participants in the high ($M = 3.93$, $SD = 1.80$) and low ($M = 4.13$, $SD = 0.98$) boredom conditions did not differ on felt nostalgia, $t(96) = 0.48$, $p = .63$, $d = 0.10$.

In Study 2 (which only included the unspecified memory), we also averaged responses to the two nostalgia items ($r[39] = .93$, $p = .001$). We proceeded with entering the ensuing index into a one-way ANOVA. Participants in the high boredom condition ($M = 4.18$, $SD = 1.24$) felt more nostalgic compared to participants in the low boredom condition ($M = 3.02$, $SD = 1.36$), $F(1, 40) = 5.21$, $p = .03$, $\eta^2 = .12$.

Experienced sadness. We entered responses to the sadness item of Study 2 into a one-way ANOVA. Participants in the high ($M = 1.35$, $SD = 0.81$) and low ($M = 1.27$, $SD = 0.77$) boredom conditions did not differ significantly on sadness, $F(1, 40) = 0.10$, $p = .75$, $\eta^2 = 0.001$.

Discussion

In two studies, we examined whether boredom increases nostalgia. Consistent with the hypothesis, increased levels of boredom strengthened felt nostalgia when participants retrieved an event of their choice. Moreover, in Study 1 we induced the assumed process directly (i.e., retrieving nostalgic events as a response to boredom) and obtained a pattern similar to that in the high boredom condition. Stated otherwise, directly inducing the proposed process led to similar results as the original effect of boredom. Study 2 additionally confirmed that the effect of boredom on nostalgia cannot be attributed to sadness.

Study 3: Boredom Promotes Nostalgic Feelings and Memories

Studies 1-2 revealed that, when bored, individuals use their memories in such a way as to feel nostalgic. Following boredom induction, these two studies assessed the extent to which participants regarded the task as boring. The studies, however, did not (and could not) indicate whether participants experienced boredom. Study 3 addressed this limitation by assessing directly the experience of boredom as a result of task involvement. Also, Studies 1-2 measured nostalgic feelings as stemming from reflection on a (seemingly nostalgic) event. Study 3 went a step further by measuring the degree to which memories were nostalgic.

Method

Participants and design. We randomly assigned 38 participants (19 women, 19 men; $M_{\text{age}} = 25.42$, $SD_{\text{age}} = 7.76$) to the conditions of a one-factor design (boredom: high vs. low).

Procedure and materials. We manipulated boredom as in Study 2 (i.e., with the line tracing procedure; Van Tilburg & Igou, 2011a). Subsequently, participants responded to two boredom manipulation check items (1 = *not at all*, 7 = *very much*). One item referred to the task (“To what extent was the task you just completed boring?”) and another to the relevant experience (“Are you experiencing boredom?”). Next, participants retrieved an unspecified memory, as in Study 2. Finally, they completed the dependent measures (1 = *strongly*

disagree, 6 = *strongly agree*). Specifically, they indicated the extent to which their memory was nostalgic (“This memory is nostalgic”) and, as before, rated their felt nostalgia (“Right now, I am feeling quite nostalgic,” “Right now, I’m having nostalgic feelings”).

Results

Manipulation checks. As we mentioned above, we assessed both perceptions of the completed task as boring and experienced boredom. Responses to the two items were correlated ($r[36] = .79, p = .001$).

Task boredom. We entered responses to the task boredom item into an ANOVA. In replication of the prior two studies, participants in the high boredom condition ($M = 5.10, SD = 2.00$) found the task more boring than those in the low boredom condition ($M = 3.28, SD = 1.81$), $F(1, 36) = 8.62, p = .01, \eta^2 = .19$. The manipulation was effective.

Experienced boredom. We entered responses to the experienced boredom item into an ANOVA. Participants in the high boredom condition ($M = 5.25, SD = 1.77$) experienced more boredom than participants in the low boredom condition ($M = 3.33, SD = 1.97$), $F(1, 36) = 9.96, p = .01, \eta^2 = .22$. The manipulation induced the experience of boredom.

Nostalgia. As mentioned above, we assessed both felt nostalgia and perceptions of memory as nostalgic. Responses to the felt nostalgia composite (see below) and the nostalgic memory rating were correlated ($r[36] = .65, p = .001$).

Felt nostalgia. We averaged responses to the two nostalgia items ($r[36] = .81, p = .001$) and entered the composite into an ANOVA. Participants in the high boredom condition ($M = 4.60, SD = 1.36$) felt more nostalgic than those in the low boredom condition ($M = 3.31, SD = 1.25$), $F(1, 36) = 9.24, p = .01, \eta^2 = .20$.

Nostalgic memories. We entered ratings of the nostalgic quality of memories into an ANOVA. Participants in the high boredom condition ($M = 4.60, SD = 1.54$) rated their memories as more nostalgic than those in the low boredom condition ($M = 3.17, SD = 1.51$), $F(1, 36) = 8.41, p = .01, \eta^2 = .19$.

Discussion

Study 3 replicated and extended the results of the previous two studies. The experimental task was not only perceived as boring but also resulted in the experience of

boredom. Furthermore, the task not only triggered felt nostalgia but also led to the perception of the corresponding memory as nostalgic. Taken together, Studies 1-3 illustrated that bored individuals retrieve memories that are, and make them feel, nostalgic.

Study 4: Search for Meaning Mediates the Effect of Boredom on Nostalgic Content

Studies 4-6 aimed to provide a test of the proposed sequence of the meaning regulation process following the tradition of mediation (MacKinnon et al., 2007). Study 4 extended the previous three studies by (a) testing the mediating role of search for meaning² and (b) assessing boredom and nostalgia in a non-explicit fashion to rule out the possibility that the observed effects are due to demand characteristics.

Method

Participants and design. We randomly assigned 72 participants (55 women, 17 men; $M_{\text{age}} = 20.67$, $SD_{\text{age}} = 4.06$) to the conditions of a one-factor design (boredom: high vs. low).

Procedure and materials. We manipulated boredom as in Study 1 (i.e., with the reference copying procedure; Van Tilburg & Igou, 2012a). Subsequently, participants completed seven items that are associated with the distinct experiential content of boredom. Sample items are “To what extent do you feel restless and unchallenged at the same time?” and “To what extent do you think that the situation serves no important purpose?” (1 = *not at all*, 5 = *very much*). Prior research (Van Tilburg & Igou, 2012a) has established that this scale is reliable ($.78 < \alpha < .87$) and constitutes a valid indicator of feelings, thoughts, goals, action tendencies, and actions associated with boredom but not with sadness, anger, or frustration. Moreover, the scale’s items do not refer explicitly to boredom, thus limiting the influence of demand characteristics. We assessed search for meaning, at the state level, by instructing participants to indicate the extent to which they would like to do something “meaningful,” “purposeful,” “of significance,” “that makes sense,” and “that is valuable” (1 = *not at all*, 7 = *very much*). These items constitute a slightly adapted version of a validated scale (Van Tilburg & Igou, in press; $\alpha = .91$) that has been used to assess mediation in research on boredom and social identity (Van Tilburg & Igou, 2011a, Study 5). An exploratory factor analysis produced a one-factor solution, $\lambda_1 = 3.87$, $R^2 = 72.26$ ($\lambda_2 = 0.53$), with each item substantially and positively loading on this factor, $.69 < r_s < .93$.

Next, we provided participants with the opportunity to retrieve a memory, as in Studies 2-3. However, rather than measuring nostalgia on an explicit level, we included items that were indicative of the typical content of nostalgic memories. Specifically, we generated five items based on the analysis of nostalgia by Wildschut and colleagues (2006). In examining the experiential signature of nostalgia, these researchers identified the central role of the self, interaction with valuable others, the presence of momentous events such as graduations or births, the redemption or mitigation of loss and disappointment, and a rich memory content (p. 988). The five items were: “This memory is about something that happened to me,” “This memory revolves around interactions with valued others,” “This memory revolves around a momentous event (e.g., graduation ceremony, birth of a child),” “This memory involves the redemption or mitigation of a loss or disappointment,” and “The content of this memory is rich” (1 = *strongly disagree*, 6 = *strongly agree*).

Results

Manipulation check. We entered responses to the experiential content measure of boredom ($\alpha = .76$) into an ANOVA. Participants in the high boredom condition ($M = 3.88$, $SD = 0.76$) experienced more boredom than those in the low boredom condition ($M = 3.54$, $SD = 0.69$), $F(1, 70) = 3.87$, $p = .05$, $\eta^2 = .05$. The manipulation check was effective.

Meaning re-establishment. We averaged the five items assessing search for meaning ($\alpha = .92$) and entered the composite into an ANOVA. Participants in the high boredom condition ($M = 5.54$, $SD = 1.12$) were more likely to engage in search for meaning compared to participants in the low boredom condition ($M = 4.78$, $SD = 1.19$), $F(1, 70) = 7.76$, $p = .01$, $\eta^2 = .10$. Consistent with the hypothesis, boredom amplified the search for meaning.

Nostalgia content. We averaged responses to the five nostalgia items ($\alpha = .55$)³ and entered the composite into an ANOVA. In replication of prior studies, participants in the high boredom condition ($M = 4.14$, $SD = 0.99$) felt more nostalgic than those in the low boredom condition ($M = 3.61$, $SD = 0.92$), $F(1, 70) = 5.51$, $p = .02$, $\eta^2 = .07$.

Mediation. We proceeded to test whether search for meaning mediated the effect of boredom on nostalgia. We tested mediation using Preacher and Hayes’s (2008, Figure 2) Macro, which allows bias-corrected and accelerated bootstraps for estimating the indirect (i.e.

mediated) effect. Boredom led to nostalgia, $B = 0.53$, $S_e = 0.23$, $t(69) = 2.35$, $p = .02$. Furthermore, boredom increased search for meaning, $B = 0.76$, $S_e = 0.27$, $t(69) = 2.78$, $p < .01$, and search for meaning predicted nostalgia, $B = 0.22$, $S_e = 0.10$, $t(69) = 2.27$, $p = 0.03$. Importantly, search for meaning mediated the effect of boredom on nostalgia: the original significant association between boredom and nostalgia dropped to non-significance after entering search for meaning in the model, $B = 0.36$, $S_e = 0.23$, $t(69) = 1.57$, $p = .12$. A bootstrap method (5,000 bootstraps; Hayes, 2009) confirmed that the 95-percent confidence interval of the indirect effect was positive, $0.04 < B_{95} < 0.40$, $S_e = 0.09$: the effect of boredom on nostalgia was fully mediated by search for meaning.

Discussion

We examined whether search for meaning mediated the effect of boredom on nostalgia. As hypothesized, manipulated boredom increased search for meaning, which in turn predicted nostalgia. Moreover, rather than assessing boredom and nostalgia with explicit measures that might be susceptible to demand characteristics, we assessed them more implicitly on the basis of typical content features (Wildschut et al., 2006; Van Tilburg & Igou, 2012a). The findings were consistent with the hypothesis: Boredom triggers a search for meaning and the subsequent recollection of nostalgia-laden memories.

Study 5: Search for Meaning Mediates the Link between Boredom and Nostalgia

The bulk of the boredom literature has focused on dispositional boredom. Capitalizing on this body of knowledge, we tested in Study 5 whether search for meaning mediates the effect of boredom on nostalgia at the dispositional level. We hypothesized, once again, that individuals prone to being bored would engage in nostalgic reflection in an attempt to find meaning in life. In other words, frequently bored individuals would be more inclined to search for meaning in their lives, and would thus be especially likely to experience nostalgia.

Method

Participants and design. We tested 90 participants (45 women, 45 men; $M_{age} = 20.32$, $SD_{age} = 1.81$).

Procedure and materials. First, we assessed dispositional boredom with two items: “How often do you experience boredom” and “How prone are you to feeling bored?” (1 =

very rarely, 7 = *very frequently*). Next, we assessed dispositional search for meaning with the 5-item search for meaning in life scale (Steger, Frazier, Oishi, & Kaler, 2006). Sample items are “I am looking for something that makes my life feel meaningful” and “I am seeking a purpose or mission for my life” (1 = *completely disagree*, 7 = *completely agree*). Finally, we assessed dispositional nostalgia with the 5-item Southampton Nostalgia Scale (Routledge et al., 2008). Sample items are: “How often do you experience nostalgia?” (1 = *very rarely*, 7 = *very frequently*) and “How important is it for you to bring to mind nostalgic experiences?” (1 = *not all*, 7 = *very much*).

Results

We averaged the boredom items ($r[88] = .77, p = .001$), the search for meaning in life items ($\alpha = .75$), and the nostalgia items ($\alpha = .91$) to form corresponding composites. Boredom was correlated with search for meaning, ($r[88] = .27, p = .01$) and with nostalgia ($r[88] = .23, p = .03$). Furthermore, search for meaning was correlated with nostalgia ($r[88] = .27, p = .01$).

We proceeded to test whether search for meaning mediated the relation between boredom and nostalgia (Preacher & Hayes, 2008). Boredom was linked to nostalgia: the more frequently participants experienced boredom, the more nostalgic they felt, $B = 0.22, S_e = 0.10, t(87) = 2.24, p = .03$. Also, boredom was linked to search for meaning: the more frequently participants experienced boredom, the more likely they were to search for meaning, $B = 0.24, S_e = 0.09, t(87) = 2.68, p = .01$. Moreover, search for meaning significantly predicted how often participants felt nostalgic, $B = 0.24, S_e = 0.11, t(87) = 2.10, p = .04$. Importantly, search for meaning mediated the effect of boredom on nostalgia: the original significant association between boredom and nostalgia dropped to non-significance after entering search for meaning in the model, $B = 0.16, S_e = 0.10, t(87) = 1.62, p = .11$. Finally, a bootstrap method (5,000 bootstraps) confirmed that the 95-percent confidence interval of the indirect effect was positive, $0.01 < B_{95} < .14, S_e = 0.03$: the association between boredom and nostalgia was significantly mediated by search for meaning.

Discussion

We were concerned with the dispositional relations among boredom, search for meaning in life, and nostalgia. As hypothesized, and in a conceptual replication of Study 4,

boredom was associated with greater search for meaning, which in turn predicted more frequent nostalgic engagement.

Study 6: Boredom Re-Establishes Meaningfulness through Nostalgia

Study 6 aimed to provide a comprehensive test of the meaning-regulation process. Based on literature that nostalgia contributes to a sense of meaningfulness (Juhl et al., 2010; Routledge et al., 2011; Routledge, Wildschut, Sedikides, & Juhl, in press), we hypothesized and tested in a single study that individuals who feel highly (vs. little) bored would become more nostalgic, and, in turn, would experience increased sense of meaningfulness. Prior work has shown that a momentary sense of meaningfulness contributes to more general perceptions of presence of meaning in one's life (Van Tilburg & Igou, 2011b). For that reason, we also tested whether the sense of meaningfulness imbued by nostalgia would subsequently foster greater presence of meaning in life as a whole. Finally, we examined the uniqueness of the proposed meaning-regulation process. Is this process evident even after controlling for positive and negative affect? We deemed this test helpful, given that nostalgia often involves (Bartlett et al., 2010) or intensifies (Hepper, Ritchie, Sedikides, & Wildschut, 2012, Study 7; Wildschut et al., 2006; Stephan, Sedikides, & Wildschut, Study 2) positive affect.

Participants and design. We randomly assigned 82 participants (61 women, 21 men; $M_{\text{age}} = 19.85$, $SD_{\text{age}} = 4.69$) to the conditions of a one-factor design (boredom: high vs. low).

Procedure and materials. We manipulated boredom with the reference copying task (Van Tilburg & Igou, 2012a), as in Studies 1 and 4. We followed up with the task boredom manipulation check ("To what extent was the task you just completed boring?"; 1 = *not at all*, 7 = *very much*).

As in the unspecified memory condition of Studies 1-3, participants recalled a past event, listed four keywords relevant to it, described it in writing, and stated the extent to which their memory was nostalgic ("This memory is nostalgic;" 1 = *strongly disagree*, 6 = *strongly agree*). Then, participants indicated their felt nostalgia ("Right now, I am feeling quite nostalgic," "Right now, I'm having nostalgic feelings"; 1 = *strongly disagree*, 6 = *strongly agree*). Subsequently, participants rated the extent to which the memory provided them with a sense of meaningfulness on the following five items (Van Tilburg & Igou, in

press): “This memory gives me ... (a) a sense of meaning, (b) a sense of purpose, (c) the impression that things make sense, (d) a sense of value, (e) a sense of significance” (1 = *strongly disagree*, 6 = *strongly agree*). Afterwards, participants indicated (1 = *strongly disagree*, 6 = *strongly agree*) whether they momentarily felt positive (“Right now, I feel positive”) and negative (“Right now, I feel negative”). Finally, they completed the presence of meaning in life questionnaire (Steger et al., 2006; 1 = *strongly disagree*, 7 = *strongly agree*), which comprises five items: “I understand my life’s meaning,” “My life has a clear sense of purpose,” “I have a good sense of what makes my life meaningful,” “I have discovered a satisfying life purpose,” “My life has no clear purpose [reverse-scored]”.

Results

Task boredom manipulation check. We entered the task boredom item into an ANOVA. As intended, participants in the high boredom condition ($M = 5.79$, $SD = 1.62$) considered the task more boring than those in the low boredom condition ($M = 4.93$, $SD = 1.44$), $F(1, 80) = 9.33$, $p = .01$, $\eta^2 = .10$.

Nostalgia. Ratings of memory as nostalgic and the felt nostalgia composite (see below) were correlated ($r[80] = .82$, $p = .001$).

Nostalgic memory. We entered the item reflecting participants’ nostalgic quality of their memory into an ANOVA. Participants in the high boredom condition ($M = 5.08$, $SD = 1.08$) regarded their memories as more nostalgic compared to those in the low boredom condition ($M = 4.27$, $SD = 1.90$), $F(1, 80) = 5.37$, $p = .02$, $\eta^2 = .06$.

Felt nostalgia. We averaged responses to the two nostalgia items ($r[80] = .97$, $p = .001$) and entered the composite into an ANOVA. Participants in the high boredom condition ($M = 4.70$, $SD = 1.06$) felt more nostalgic than those in the low boredom condition ($M = 3.92$, $SD = 1.84$), $F(1, 80) = 5.24$, $p = .03$, $\eta^2 = .06$.

Meaningfulness. So far, the results indicate that boredom leads to nostalgia (i.e., retrieval of nostalgic memories, felt nostalgia). We hypothesized that nostalgia in turn contributes to a sense of meaningfulness, and that boredom has an indirect effect on meaningfulness through nostalgia. We tested this hypothesis with two structural equation models (SEM). In the main SEM we focused on the key variables of interest, whereas in the

subsidiary SEM we controlled for positive and negative affect. We estimated the effects using bias-corrected bootstraps (Efron, 1987).

Main SEM. As portrayed in Figure 3, the main model specified the boredom induction (0 = *low boredom*; 1 = *high boredom*) as predictor of a latent factor labeled nostalgia; this latent factor represented the two nostalgia indicators (i.e., nostalgic memory, felt nostalgia). Also, the model treated nostalgia as predictor of sense of meaningfulness ($\alpha = .91$ for the relevant composite), and treated sense of meaningfulness as predictor of presence of meaning in life averages ($\alpha = .87$ for the relevant composite after coding the reversed item; the two indices were correlated, $r[80] = .38, p < .001$). We set the error variance of nostalgia to 1 for model identification purposes (Kline, 2005).

The model fit was excellent. The modeled associations did not deviate significantly from the observed covariances between the modeled variables, $\chi^2(5) = 1.58, p = .90$, and the fit indices confirmed that the model described the observed data very well, $RMEA = .00, TLI = 1.05, CFI = 1.00$. According to these results, there was no need to increase the model's complexity (e.g., by adding arrows) in order to achieve a faithful depiction of the data.

Given the excellent model fit, we proceeded with the estimation of the direct effects using the bias-corrected bootstrapping method and employing 5,000 bootstraps. All proposed direct effects were significant. To begin with, boredom induction predicted nostalgia, as participants who were highly bored scored higher on nostalgia, $B = 0.56, p = .01 (0.11 < B_{95} < 0.98)$. Both the nostalgic memory indicator and the felt nostalgia indicator loaded significantly on nostalgia, $B = 1.45, p = .001 (1.17 < B_{95} < 1.72)$, $B = 1.31, p = .001 (1.03 < B_{95} < 1.56)$, respectively. Nostalgia subsequently predicted greater sense of meaningfulness, $B = 0.76, p = .001 (0.51 < B_{95} < 1.01)$, which in turn contributed positively to presence of meaning in life, $B = 0.30, p = .001 (0.15 < B_{95} < 0.47)$.

Next, we turned to the analysis of the indirect effects, again employing 5,000 bias-corrected bootstraps. The indirect effects of boredom on the nostalgia indicators were significant, $0.16 < B_{95} < 1.45$, and $0.15 < B_{95} < 1.34$, respectively. Moreover, boredom predicted an increase in sense of meaningfulness through nostalgia, $0.09 < B_{95} < 0.82$, and nostalgia predicted an increase in presence of meaning in life, $0.13 < B_{95} < 0.36$. Importantly,

the two-step indirect effect of boredom on presence of meaning in life through nostalgia and sense of meaningfulness was also significant, $0.03 < B_{95} < 0.28$. Boredom increases the perceived presence of meaning in life *through* nostalgia.

Subsidiary SEM. As portrayed in Figure 3, the subsidiary model was identical to the main one, with the inclusion of positive and negative affect as controls. These affect indicators were allowed to correlate, and each predicted of sense of meaningfulness and presence of meaning in life. The model's fit was excellent, $\chi^2(9) = 4.97, p = .84, RMEA = .00, TLI = 1.04, CFI = 1.00$. Moreover, all direct effects that were also specified in the main model were still significant (all $ps < .03$; estimated with 5,000 bias-corrected bootstraps). We obtained additional significant associations between nostalgia with positive and negative affect, $B = 0.42, p = .01 (0.15 < B_{95} < 0.69)$, $B = -0.30, p = .05 (-0.62 < B_{95} < -0.01)$, respectively. Also, positive affect accounted for some of the variance in sense of meaningfulness, $B = 0.39, p = .02 (0.07 < B_{95} < 0.65)$.

The indirect effects of boredom on sense of meaningfulness and presence of meaning in life partially ran through positive affect and negative affect. However, we were particularly interested in finding out if the part of the indirect effects that did *not* involve positive and negative affect was significant. We adopted the significance criterion for indirect effects offered by Cohen and Cohen (1983; see also Kline, 2005): If all specific direct effects within an indirect effect are below a certain significance level (e.g., $\alpha = .05$), then it is reasonable to assume that the indirect effect is also below that significance level. All p -values among the direct effects within the boredom-nostalgia-sense of meaningfulness path and the boredom-nostalgia-sense of meaningfulness-presence of meaning path were below the critical value of .05 (all $ps < .02$, and all $ps < .03$, respectively), reinforcing the assumption that the two crucial indirect effects also were significant at the .05 level. Even after controlling for positive and negative affect, nostalgia *still* served as a source for meaning-regulation.

Discussion

In Study 6, we tested the full meaning-regulation process. We included a meaning threat (boredom), observed attempts at meaning-reestablishment (i.e., through nostalgia), and witnessed increases in sense of meaningfulness and presence of meaning in life. Not only did

we obtain support for the proposed meaning-regulation process, but we also documented its uniqueness: The process held up even when controlling for negative and positive affect.

General Discussion

We proposed a theoretical model according to which nostalgia can be used as a tool to re-establish meaningfulness when feeling bored. Across six studies, we examined systematically the two steps of the proposed model. In Study 1, we investigated whether engagement in a boring task leads to retrieval of nostalgia-imbued memories when individuals have the opportunity to retrieve a past event. Indeed, highly bored participants retrieved memories associated with feeling nostalgic, regardless of instructions specifying that the memory be nostalgic. Little bored participants did not engage much in the retrieval of nostalgic memories, unless they were instructed to do so. Study 2 replicated the effect of boredom on nostalgic retrieval using a different boredom induction and ruling out sad-mood repair as an alternative. Finally, Study 3 demonstrated that the experience of boredom led to felt nostalgia following memory retrieval.

Next, we proceeded to test the meaning-regulation process. Study 4 showed that search for meaning mediates the effect of state boredom on nostalgic memory content. Study 5 indicated that frequently bored individuals are keener to engage in search for meaning in life, which was associated with higher levels of dispositional nostalgia. Finally, Study 6 demonstrated that nostalgia helps bored individuals to experience a sense of meaningfulness and, more generally, the presence of meaning in their life. Boredom, in this study, was linked to a greater sense of meaningfulness and heightened presence of meaning in life *through nostalgia*. Crucially, this association was evident even after controlling for generalized affect. Would any form of reminiscence help to alleviate the meaning void signaled by boredom, or is this a unique feature of nostalgic reverie? All participants engaged in reminiscence. However, it was nostalgic reminiscence, in particular, that contributed to perceived meaning in life. This study, then, lends support to the notion that nostalgia is a central constituent of the memories that individuals retrieve to alleviate the boredom-induced lack of meaning..

Implications and Future Research Directions

We would like to differentiate our findings from prior literature. This literature documents that nostalgia increases perceived meaning in life (Routledge et al., 2011). Moreover, when perceived meaning in life is challenged (e.g., through mortality salience), individuals become more nostalgic (Routledge et al., 2006, 2011). Also, those who often feel nostalgic are less affected by death awareness (Juhl et al., 2010). The literature, moreover, indicates that boredom is associated with considering one's actions or life in general as meaningless (Fahlman et al., 2009; Van Tilburg & Igou, 2012a). Also, experimental inductions of boredom increase the search for meaning in life (Van Tilburg & Igou, 2011a). These are established findings. In contrast, the link between boredom and nostalgia, as well as the search for meaning as a mediating mechanism, are novel contributions of our research. Nevertheless, we have also replicated the findings that a boredom induction increases search for meaning in Study 4 (Van Tilburg & Igou, 2011a), the association of dispositional boredom with search for meaning in Study 5 (Van Tilburg & Igou, 2012a), and the association between nostalgia and presence of meaning in Study 6 (Routledge et al., 2011).

Our research shows that nostalgia can help to overcome the meaning void signaled by boredom. However, our findings do not necessarily imply that bored persons engage in nostalgic reverie as a default strategy. Nostalgia constituted a response to boredom when participants were probed to retrieve a memory. Although meaning-regulation mechanisms sometimes operate automatically (Van Tongeren & Green, 2010), our findings do not establish that nostalgia is implicated as an automatic strategy to augment meaningfulness in response to boredom. Possibly, implication of nostalgia as a meaning-regulation strategy in the face of boredom needs a facilitative context such as probing recollection of past events or highlighting the benefits of nostalgic reverie.

Can other sources of nostalgia help to combat the meaning void signaled by boredom? Nostalgic song lyrics or music is positively associated with meaning in life (Routledge et al., 2011). It is likely, then, that nostalgia brought about by song lyrics or music will also act as a remedy against boredom's meaninglessness, even though reminiscence might still play a role within this particular nostalgia source.

Individuals may not need to resort to nostalgia when bored; instead, they may avoid boring contexts altogether or disengage from boring activities (e.g., reading a dull book). However, avoidance or disengagement may be undesirable or virtually impossible. For example, whereas putting aside a boring book may be a harmless act, quitting a boring job may entail far-reaching and negative implications (e.g., lack of income, reduction in frequency of social contact, protracted unemployment). Similarly, avoiding boredom in some settings (e.g., nursing homes, hospitals, prisons) may be practically impossible. In such cases, nostalgia will provide an easy-to-implement and valuable strategy for combating boredom and increasing meaningfulness.

Boredom can lead to other meaning re-establishment efforts, besides nostalgia. These include outgroup derogation (Van Tilburg & Igou, 2011a) and aggression (Van Tilburg & Igou, 2012c). We focused in this article on nostalgia for several reasons. To begin with, nostalgia represents a readily available tool for fighting off meaninglessness. Moreover, whereas responses such as outgroup derogation and aggression bear undesirable societal consequences, nostalgia presents a meaning re-establishment alternative that entails beneficial consequences for the individual (Sedikides et al., 2008; Vess et al., 2012; Sedikides, Wildschut, Routledge, Arndt, & Zhou, 2009) and society (Turner, Wildschut, & Sedikides, 2012, in press; Zhou et al., 2012). Nostalgic engagement may reduce the proclivity to engage in undesirable behavior in response to boredom. Future research will do well to examine how nostalgia can be promoted as a preferred boredom-counteracting strategy, when multiple meaning-regulation alternatives are available.

Only recently has boredom started to receive due empirical attention. The relevant literature has been predominantly concerned with dispositional boredom, examining its correlates and associating it with intrapersonal or societal dysfunctionality (Blaszczynski et al., 1990; Gordon et al., 1997; Kass et al., 2001; Rupp & Vodanovich, 1997; Stickney & Miltenberger, 1999; Verwey & Zaidel, 2000). In this research, we were also concerned with dispositional boredom (Study 5) but focused in addition on state boredom. We considered it timely to zero in on state boredom. Van Tilburg and Igou (2012a) identified a unique set of feelings, cognitions, and motivations that distinguish this frequent state from other negative

states (e.g., sadness, anger, frustration). The distinct emotional signature of state boredom may shed light to its detrimental repercussions such as risk-taking (e.g., joy riding), physical aggression, and delinquency (Dahlen, Martin, Ragan, & Kuhlman, 2004; Kellett & Gross, 2006; Newberry & Duncan, 2001; Rupp & Vodanovich, 1997). Critically, our research points to one way that such consequences may be averted: through nostalgic reflection.

Nostalgia is a bittersweet emotion: it contains both positive and negative features, with the former outweighing the latter (Hepper, Ritchie, Sedikides, & Wildschut, 2012; Wildschut et al., 2006). Nostalgia also fulfills several functions, most pertinent of which is the existential one (Juhl et al., 2010; Routledge, Sedikides, Wildschut, & Juhl, in press). Our research adds to the understanding of how and when nostalgia is implemented as a process to protect oneself from threats to life's meaningfulness. By showing that the mundane experience of boredom spawns nostalgia in search for meaningfulness, we highlight nostalgia's relevance in the face of everyday existential fears.

Societal relevance. That nostalgic reverie can help to alleviate the meaningfulness signaled by boredom has societal implications. Boredom is an experience that affects individuals of various age groups, ranging from adolescents (Caldwell, Darling, Payne, & Dowdy, 1999) to the elderly (Gana & Akremi, 1998), while being easily bored is associated with psychological dysfunction (Vodanovich, 2003). Nostalgia, by instilling a sense of meaningfulness, constitutes a potent remedy for boredom. Nostalgia's benefits can be conveyed through social exchange or music (Barrett et al., 2010; Routledge et al., 2011). Boredom and meaningfulness may be counteracted by conversing with nursing-home residents about their past or arranging for them to listen to nostalgic songs. Similar interventions may be effective among other somewhat marginalized groups such as immigrants, first-year boarding school students, or international students (Sedikides et al., 2009), among the unemployed and alienated (Barbalet, 1999; Fromm, 1972/2004; Sedikides, Wildschut, Gaertner, Routledge, & Arndt, 2008), or among shy and depressed persons (Crozier, 2001; Farmer & Sundberg, 1986).

In Closing

Across six studies, we tested and confirmed our theoretical model. Boredom fosters the retrieval of nostalgic memories in an attempt to re-establish a sense of meaningfulness. Boredom is associated with meaninglessness and motivates search for meaning. Nostalgic memories, in turn, furnish a sense of meaningfulness and presence of meaning in life. The retrieval of nostalgic memories can be used as a cure to the damaging effects of boredom. And this assertion is a cause for celebration: feeling bored in the present is compensated upon by entering nostalgically a beautiful past that makes life (present *and* future) worth living.

References

- Barbalet, J. M. (1999). Boredom and social meaning. *British Journal of Sociology*, *50*, 631-646.
- Barrett, W. (1959, November 21). What is existentialism? *Saturday Evening Post*, pp. 45, 126, 129-130.
- Barrett, F. S., Grimm, K. J., Robins, R. W., Wildschut, T., Sedikides, C., & Janata, P. (2010). Music-evoked nostalgia: Affect, memory, and personality. *Emotion*, *10*, 390-403.
- Blaszczynski, A., McConaghy, N., & Frankova, A. (1990). Boredom proneness in pathological gambling. *Psychological Reports*, *67*, 35-42.
- Bonebright, C. A., Clay, D. L., & Ankenmann, R. D. (2000). The relationship of workaholism with work-life conflict, life satisfaction, and purpose in life. *Journal of Counseling Psychology*, *47*, 469-477.
- Boym, S. (2001). *The future of nostalgia*. New York, NY: Basic Books.
- Caldwell, L. L., Darling, N., Payne, L. L., & Dowdy, B. (1999). "Why are you bored?": An examination of psychological and social control causes of boredom among adolescents. *Journal of Leisure Research*, *31*, 103-121.
- Chamberlain, K., & Zika, S. (1988). Religiosity, life meaning, and well-being: Some relationships in a sample of women. *Journal for the Scientific Study of Religion*, *27*, 411-420.
- Cialdini, R. B., Schaller, M., Houlihan, D., Arps, K., Fultz, J., & Beaman, A. (1987). Empathy-based helping: Is it selflessly or selfishly motivated? *Journal of Personality and Social Psychology*, *52*, 749-758.
- Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Crozier, W. R. (2001). *Understanding shyness: Psychological perspectives*. Basingstoke, UK: Palgrave.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper and Row.

- Dahlen, E. R., Martin, R. C., Ragan, K., Kuhlman, M. M. (2004). Boredom proneness in anger and aggression: Effects of impulsiveness and sensation seeking. *Personality and Individual Differences, 37*, 1615-1627.
- Debats, D. L., Van der Lubbe, P. M., & Wezeman, F. R. A. (1993). On the psychometric properties of the Life Regard Index (LRI): A measure of meaningful life. *Personality and Individual Differences, 14*, 337-345.
- Efron, B. (1987). Better bootstrap confidence intervals. *Journal of the American Statistical Association, 82*, 171-185.
- Fahlman, S. A., Marcer, K. B., Gaskocski, P., Eastwood, A. E., & Eastwood, J. D. (2009). Does a lack of life meaning cause boredom? Results from psychometric, longitudinal, and experimental analyses. *Journal of Social and Clinical Psychology, 28*, 307-340.
- Farmer, R., & Sundberg, N. D. (1986). Boredom proneness: The development and correlates of a new scale. *Journal of Personality Assessment, 50*, 4-17.
- Frankl, V. E. (1963). *Man's search for meaning: An introduction to logotherapy*. New York, NY: Pocket Books.
- Fromm, E. (1972/2004). The Erich Fromm theory of aggression. *The New York Times Magazine*, New York. Derived at: www.erich-fromm.de/data/pdf/1972c-e.pdf
- Gana, K., & Akremi, M. (1998). French adaptation and validation of the Boredom Proneness Scale (BP). *L'Annee Psychologique, 98*, 429-450.
- Gordon, A., Wilkinson, R., McGrown, A., & Jovanoska, S. (1997). The psychometric properties of the boredom proneness scale: An examination of its validity. *Psychological Experiments, 42*, 85-97.
- Greenberg, J., Koole, S. L., & Pyszczynski, T. (2004). (Eds.). *Handbook of experimental existential psychology*. New York, NY: Guilford Press.
- Harlow, L. L., Newcomb, M. D., & Bentler, P. M. (1986). Depression, self-derogation, substance use, and suicidal ideation: Lack of purpose in life as a meditational factor. *Journal of Clinical Psychology, 42*, 5-21.

- Hart, C. M., Sedikides, C., Wildschut, T., Arndt, J., Routledge, C., & Vingerhoets, A. J. J. M. (2011). Nostalgic recollections of high and low narcissists. *Journal of Research in Personality, 45*, 238-242.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs, 76*, 408-420.
- Heine, S. J., Proulx, T., & Vohs, K. D. (2006). The meaning maintenance model: On the coherence of social motivations. *Personality and Social Psychology Review, 10*, 88-110.
- Hepper, E. G., Ritchie, T. D., Sedikides, C., & Wildschut, T. (2012). Odyssey's end: Lay conceptions of nostalgia reflect its original Homeric meaning. *Emotion, 12*, 102-119.
- Hepper, E. G., Robertson, S., Wildschut, T., Sedikides, C., & Routledge, C. (2012). *Nostalgia and well-being across the life-span*. Unpublished manuscript, University of Southampton.
- Hepper, E. G., Wildschut, T., Sedikides, C., Yung, Y.-F., Abakoumkin, G., Abdollahi, A., Arian, G., Cisek, S., Didier, D. B., Gebauer, J., Gerber, J., Gonzales, R., Kusumi, T., Misra, G., Ritchie, T. D., Rusu, M., Stephan, E., Vingerhoets, A., & Zhou, X. (2012). *Nostalgia: A universal emotion*. Unpublished manuscript, University of Southampton.
- Juhl, J., Routledge, C., Arndt, J., Sedikides, C., & Wildschut, T. (2010). Fighting the future with the past: Nostalgia buffers existential threat. *Journal of Research in Personality, 44*, 309-314.
- Kass, S. J., Vodanovich, S. J., & Callender, A. (2001). State-trait boredom: Relationship to absenteeism, tenure, and job satisfaction. *Journal of Business and Psychology, 16*, 317-327.
- Kellett, S., & Gross, H. (2006). Addicted to joyriding? An exploration of young offenders' accounts of their car crime. *Psychology, Crime, & Law, 12*, 39-59.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York, NY: Guilford Press.
- Larson, R. W., & Richards, M. H. (1991). Boredom in the middle school years: Blaming schools versus blaming students. *American Journal of Education, 99*, 418-443.

- Leary, M. R., Rogers, P. A., Canfield, R. W., & Coe, C. (1986). Boredom in interpersonal encounters: Antecedents and social implications. *Journal of Personality and Social Psychology, 51*, 968-975.
- Leong, F. T., & Schneller, G. R. (1993). Boredom proneness: Temperamental and cognitive components. *Personality and Individual Differences, 14*, 233-239.
- MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology, 58*, 593-614.
- McAdams, D. P., Reynolds, J., Lewis, M., Patten, A. H., & Bowman, P. J. (2001). When bad things turn good and good things turn bad: Sequences of redemption and contamination in life narratives and their relation to psychosocial adaptation in midlife adults and in students. *Personality and Social Psychology Bulletin, 27*, 474-485.
- Newberry, A. L., & Duncan, R. D. (2001). Roles of boredom and life goals in juvenile delinquency. *Journal of Applied Social Psychology, 31*, 527-541.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavioral Research Methods, 40*, 879-891.
- Pyszczynski, T., Greenberg, J. & Koole, S. L. (2004). Experimental existential psychology: Exploring the human confrontation with reality. In J. Greenberg, S. L. Koole, & T. Pyszczynski (Ed.), *Handbook of experimental existential psychology* (pp. 3-9). New York, NY: Guilford Press.
- Routledge, C., Arndt, J., Sedikides, C., & Wildschut, T. (2006). A blast from the past: The terror management function of nostalgia. *Journal of Experimental Social Psychology, 44*, 132-140.
- Routledge, C., Arndt, J., Wildschut, T., Sedikides, C., Hart, C. M., Juhl, J., Vingerhoets, A., & Schlotz, W. (2011). The past makes the present meaningful: Nostalgia as an existential resource. *Journal of Personality and Social Psychology, 101*, 638-653.

- Routledge, C., Sedikides, C., Wildschut, T., & Juhl, J. (in press). Finding meaning in the past: Nostalgia as an existential resource. In K. Markman, T. Proulx, & M. Lindberg (Eds.), *The psychology of meaning*. Washington, DC: American Psychological Association.
- Routledge, C., Wildschut, T., Sedikides, C., Juhl, J., & Arndt, J. (in press). The power of the past: Nostalgia as a meaning-making resource. *Memory*.
- Rupp, D. T., & Vodanovich, S. J. (1997). The role of boredom proneness in self-reported anger and aggression. *Journal of Social Behavior and Personality*, *12*, 925-936.
- Sansone, C., Weir, C., Harpster, L., & Morgan, C. (1992). Once a boring task always a boring task? Interest as a self-regulatory process. *Journal of Personality and Social Psychology*, *63*, 379-390.
- Sedikides, C. (1992). Changes in the valence of the self as a function of mood. *Review of Personality and Social Psychology*, *14*, 271-311.
- Sedikides, C. (1994). Incongruent effects of sad mood on self-conception valence: It's a matter of time. *European Journal of Social Psychology*, *24*, 161-172.
- Sedikides, C., & Skowronski, J. J. (1991). The law of cognitive structure activation. *Psychological Inquiry*, *2*, 169-184.
- Sedikides, C., Wildschut, T., Arndt, J., & Routledge, C. (2006). Affect and the self. In J. P. Forgas (Ed.), *Affect in social thinking and behavior: Frontiers in social psychology* (pp. 197-215). New York, NY: Psychology Press.
- Sedikides, C., Wildschut, T., Arndt, J., & Routledge, C. (2008). Nostalgia: Past, present, and future. *Current Directions in Psychological Science*, *17*, 304-307.
- Sedikides, C., Wildschut, T., & Baden, D. (2004). Nostalgia: Conceptual issues and existential functions. In J. Greenberg, S. L. Koole, & T. Pyszczynski (Eds.), *Handbook of experimental existential psychology* (pp. 200-214). New York, NY: Guilford Press.
- Sedikides, C., Wildschut, T., Gaertner, L., Routledge, C., & Arndt, J. (2008). Nostalgia as enabler of self-continuity. In F. Sani (Ed.), *Self-continuity: Individual and collective perspectives* (pp. 227-239). New York, NY: Psychology Press.

- Sedikides, C., Wildschut, T., Routledge, C., Arndt, J., & Zhou, X. (2009). Buffering acculturative stress and facilitating cultural adaptation: Nostalgias as a psychological resource. In R. S. Wyer, Jr., C.-y. Chiu, & Y.-y. Hong (Eds.), *Understanding culture: Theory, research, and application* (pp. 361-378). New York, NY: Psychology Press.
- Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, *48*, 813-838.
- Smith, J. L., Wagaman, J., & Handley, I. M. (2009). Keeping it dull or making it fun: Task variation as a function of promotion versus prevention focus. *Motivation and Emotion*, *33*, 150-160.
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology*, *53*, 80-93.
- Stephan, E., Sedikides, C., & Wildschut, T. (2012). Mental travel into the past: Differentiating recollections of nostalgic, ordinary, and positive events. *European Journal of Social Psychology*, *42*, 290-298.
- Stickney, M. L., & Miltenberger, R. G. (1999). Evaluating direct and indirect measures for the functional assessment of binge eating. *International Journal of Eating Disorders*, *26*, 195-204.
- Turner, R. N., Wildschut, T., & Sedikides, C. (2012). Dropping the weight stigma: Nostalgia improves attitudes toward persons who are overweight. *Journal of Experimental Social Psychology*, *48*, 130-137.
- Turner, R. N., Wildschut, T., & Sedikides, C. (in press). Combating the mental health stigma with nostalgia. *European Journal of Social Psychology*.
- Van Tilburg, W. A. P., & Igou, E. R. (2011a). On boredom and social identity: A pragmatic meaning-regulation approach. *Personality and Social Psychology Bulletin*, *37*, 1679-1691

- Van Tilburg, W. A. P., & Igou, E. R. (2011b). On the meaningfulness of existence: When life salience boosts adherence to worldviews. *European Journal of Social Psychology, 41*, 740-750.
- Van Tilburg, W. A. P., & Igou, E. R. (in press). On the meaningfulness of behavior: An expectancy \times value approach. *Motivation and Emotion*.
- Van Tilburg, W. A. P., & Igou, E. R. (2012a). On boredom: Lack of challenge and meaning as distinct boredom experiences. *Motivation and Emotion, 36*, 181-194.
- Van Tilburg, W. A. P., & Igou, E. R. (2012b). *Why bored George helps others: A pragmatic meaning-regulation hypothesis on boredom and prosocial behavior*. Manuscript under review, University of Limerick.
- Van Tilburg, W. A. P., & Igou, E. R. (2012c). *Bored to be wild: Meaning-regulation attempts in the boredom proneness-aggression link*. Manuscript under review, University of Limerick.
- Van Tongeren, D. R., & Green J. D. (2010). Combating meaninglessness: On the automatic defense of meaning. *Personality and Social Psychology Bulletin, 36*, 1372-1384.
- Verwey, W. B., & Zaidel, D. M. (2000). Predicting drowsiness accidents from personal attributes, eye blinks and ongoing driving behavior. *Personality and Individual Differences, 28*, 195-204.
- Vess, M., Arndt, J., Routledge, C., Sedikides, C., & Wildschut, T. (2012). Nostalgia as a resource for the self. *Self and Identity, 3*, 273-284.
- Vodanovich, S. J. (2003). Psychometric properties of boredom: A review of the literature. *Journal of Psychology, 137*, 569-595.
- Wallbott, H. G. (1998). Bodily expression of emotion. *European Journal of Psychology, 28*, 879-896.
- Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nostalgia: Content, triggers, functions. *Journal of Personality and Social Psychology, 91*, 975-993.
- Wildschut, C., Sedikides, C., & Cordaro, F. (2011). Self-regulatory interplay between negative and positive emotions: The case of loneliness and nostalgia. In I. Nyklicek,

A. J. J. M. Vingerhoets, & M. Zeelenberg (Eds.), *Emotion regulation and well-being* (pp. 67-83). New York, NY: Springer.

Wildschut, T., Sedikides, C., Routledge, C., Arndt, J., & Cordaro, F. (2010). Nostalgia as a repository of social connectedness: The role of attachment-related avoidance. *Journal of Personality and Social Psychology, 98*, 573-586.

Wilson, T. D., Aronson, E., & Carlsmith, K. (2010). The art of laboratory experimentation. In S. Fiske, D. Gilbert, & G. Lindzey (Eds.), *The handbook of social psychology* (5th ed., pp. 49-79). New York, NY: Wiley.

Zauberman, G., Ratner, R. K., & Kim. B. K. (2009). Memories as assets: Strategic memory protection in choice over time. *Journal of Consumer Research, 35*, 715-728.

Zhou, X., Sedikides, C., Wildschut, T., & Gao, D. -G. (2008). Counteracting loneliness: On the restorative function of nostalgia. *Psychological Science, 19*, 1023-1029.

Zhou, X., Wildschut, T., Sedikides, C., Shi, K., & Feng, C. (2012). Nostalgia: The gift that keeps on giving. *Journal of Consumer Research, 39*, 39-50.

Footnotes

¹We supplied a dictionary definition of nostalgia (“sentimental longing for the past”; Wildschut et al., 2006) in all studies but Study 2. In Study 1, we placed the definition *after* recall for participants who retrieved an ordinary memory (in both boredom conditions); however, we placed the definition *prior* to recall for participants who retrieved a nostalgic memory (in both boredom conditions). In Study 2, 3, 5, and 6, we placed the definition immediately prior to the first nostalgia measure. Standardization suggests that explicit reference to nostalgia cannot account for the obtained effects (due to demand characteristics).

²We conducted a pilot study ($N = 38$) to verify that boredom involves meaninglessness but not other nostalgia triggers (i.e., negative mood, loneliness, low self-esteem), anger, or frustration (Van Tilburg & Igou, in press; Wildschut et al., 2006). After a spiral drawing task (Study 2), we measured (1 = *not at all*, 7 = *very much*) task boredom (“To what extent was the task you just completed boring?”), meaninglessness (“I experience a sense of meaninglessness”), negative mood (“I feel sad”), loneliness (“I feel lonely”), low self-esteem (“I feel that I have low self-esteem”), anger (“I feel angry”), and frustration (“I feel frustration”). Participants in the high relative to low boredom condition reported elevated boredom ($M = 5.05$, $SD = 1.62$ vs. $M = 3.42$, $SD = 1.22$), $F(1, 36) = 12.37$, $p = .001$, $\eta^2 = .15$, and elevated meaninglessness ($M = 4.32$, $SD = 2.14$ vs. $M = 2.89$, $SD = 1$), $F(1, 36) = 4.73$, $p = .04$, $\eta^2 = .12$. No other effect was significant ($F_s < 1.08$, $p_s > .31$).

³Given the low reliability, we analyzed the five items separately. Memories revolved more around the self when boredom was high ($M = 5.31$, $SD = 1.24$) than low ($M = 4.19$, $SD = 1.82$), $F(1, 70) = 9.19$, $p < .01$, $\eta^2 = 0.12$. Similarly, memories involved greater redemption/mitigation of loss or disappointment under high ($M = 2.64$, $SD = 1.99$) than low ($M = 1.78$, $SD = 1.22$) boredom, $F(1, 70) = 4.90$, $p = .03$, $\eta^2 = 0.07$. We found no differences regarding the role of valued others ($M = 4.80$, $SD = 1.45$ vs. $M = 4.97$, $SD = 1.32$), momentous event ($M = 2.89$, $SD = 1.77$ vs. $M = 3.20$, $SD = 1.94$), and richness of memory content ($M = 4.44$, $SD = 1.61$ vs. $M = 4.61$, $SD = 1.76$; $F_s < 1$, $p_s > .48$). It is likely that events in which the self triumphs over adversity (McAdams, Reynolds, Lewis, Patten, & Bowman, 2001; Wildschut et al., 2006) are primarily responsible for meaning-regulation.

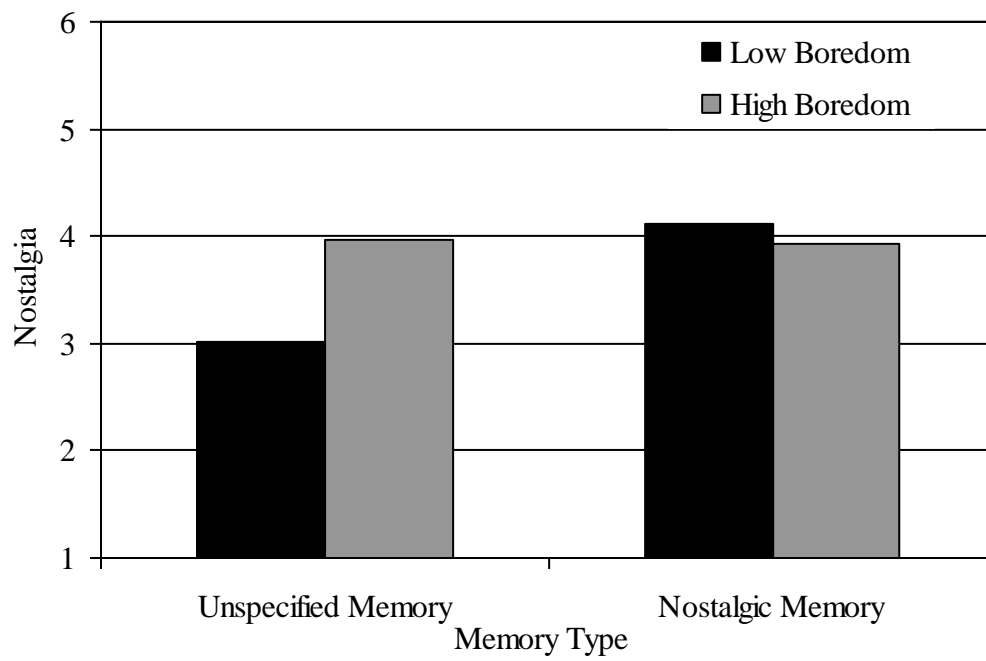
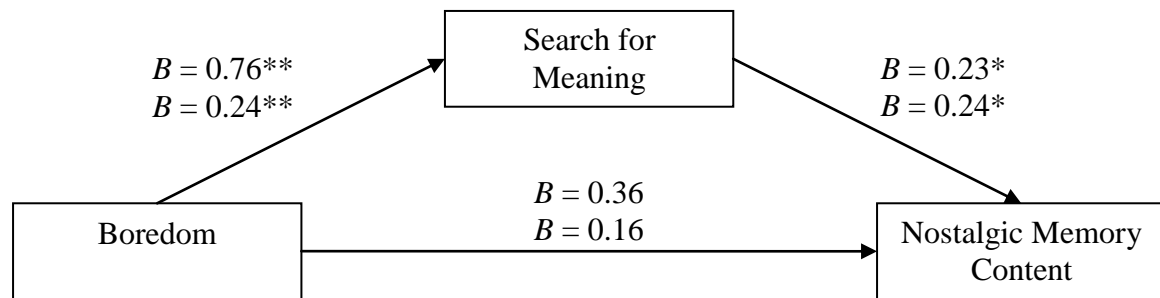
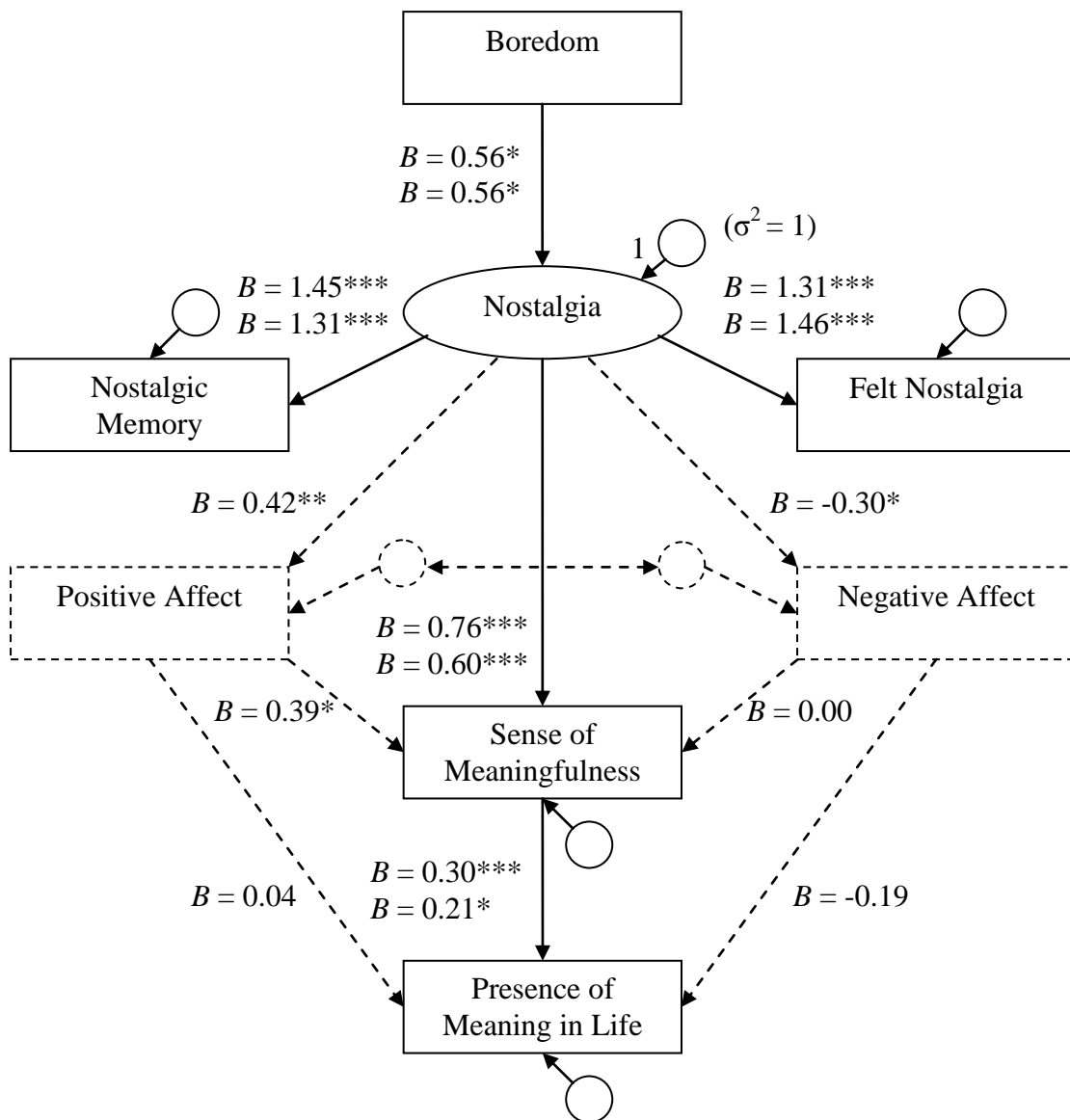
Figure 1: *Nostalgia as a Function of Induced Boredom and Memory Type (Study 1)*

Figure 2: *Search for Meaning Mediates the Boredom-Nostalgia Link in Study 4 & 5*

Note: * $p = .05$; ** $p = .01$. The top coefficients are based on Study 4 whereas the bottom coefficients stem from Study 5.

Figure 3: SEM in Study 6



Note. * $p = .05$; ** $p = .01$; *** $p = .001$. The top coefficients were estimated in the main SEM whereas the bottom coefficients were estimated in the subsidiary SEM. Dotted arrows and boxes reflect the additions for the subsidiary SEM.