

Preventing Boredom with Gratitude: The Key Role of Meaning in Life

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MOTIVATION AND EMOTION ON NOVEMBER 7th 2023]Muireann K. O'Dea¹, Eric R. Igou¹, and Wijnand A. P. van Tilburg^{2,3}University of Limerick¹University of Essex²International Society of Boredom Studies³**Author Note****Muireann K. O'Dea** <https://orcid.org/0000-0002-1391-9927>**Eric R. Igou** <https://orcid.org/0000-0001-7744-9648>**Wijnand A. P. van Tilburg** <https://orcid.org/0000-0002-9724-0603>

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Abstract

Boredom signals a lack of meaning. Gratitude promotes feelings of meaning in life. We proposed accordingly that gratitude, by engendering meaning, shields against boredom. Specifically, we hypothesized that gratitude prevents boredom by increasing perceptions of meaning in life. We tested this hypothesis in five studies ($N = 954$). Study 1 revealed that grateful people are less prone to boredom. Studies 2a and 2b demonstrated that grateful people are less prone to boredom, and this relationship is statistically mediated by elevated meaning in life. Study 3 found that dispositional gratitude also predicted less state boredom in response to a behavioural task, via heightened perceptions of meaning in life. In Study 4, experimentally induced gratitude reduced boredom through increased perceptions of meaning in life. The findings demonstrate gratitude's role in effectively reducing and preventing boredom by boosting the feeling that life is meaningful.

Keywords: boredom, gratitude, meaning in life, existential psychology, well-being

Preventing Boredom with Gratitude: The Role of Meaning in Life

“Every single kilometre, I was so grateful ... I was so grateful at 25km, at 30km I was so grateful” — Sifan Hassan on winning her debut marathon (BBC Sport, 2023).

The experience of boredom is pervasive in everyday life and across a range of contexts, including school/college, the workplace, and sports (Chin et al., 2017; Wolff et al., 2021). Gratitude can be a common practice in daily life (e.g., BBC Sport, 2023) and is known to be a positive resource to buffer against psychological challenges (O’Connell et al., 2016; Portocarrero et al., 2020; Wood et al., 2010; Wood et al., 2008). In the present investigation, we propose that gratitude is a psychological resource that can prevent boredom and does so by offering a sense of meaning in life.

Boredom is a distinct affective state characterized by a lack of perceived meaning, perceived challenge (Van Tilburg & Igou, 2012), and attentional failures (Eastwood et al., 2012; Tam et al., 2021b). Boredom is intertwined with the feeling of meaninglessness and is thus associated with many problematic psychological and physiological outcomes, such as more depressive symptoms and greater anxiety and stress (Goldberg et al., 2011; Lee & Zelman, 2019). However, little is known about how we can mitigate the experience and its consequences. Accumulating evidence suggests that experiences that foster perceptions of meaning can hinder boredom (O’Dea et al., 2022; Van Tilburg et al., 2019b). Gratitude is a positive emotion that helps us create meaning in our lives (Bono & Sender, 2018; McCullough, 2002). Together, we incorporate the notion that meaning in life is central to the regulation of boredom and theorize that by imbuing life with meaning, gratitude will be associated with lower boredom levels.

Boredom: A Lack of Meaning

Boredom is often defined as “the aversive experience of wanting, but being unable, to engage in satisfying activity” (Eastwood et al., 2012, p. 482). It is a negative emotion

associated with low levels of perceived challenge, meaningfulness, and attention (Eastwood et al., 2012; Merrifield & Danckert, 2014; Tam et al., 2021b; Van Tilburg & Igou, 2012). It is a ubiquitous experience to which many are vulnerable to some degree (Chin et al., 2017). Empirical research on boredom has mainly focused on the correlates of boredom proneness and the consequences of state boredom (e.g., Chan et al., 2018; Van Tilburg & Igou, 2017a). Boredom proneness is a trait-like construct representing individual differences in the frequency and intensity of boredom and/or the perception that one's life is boring (Tam et al., 2021a). Meanwhile, state boredom is momentary and often evoked by situations that are dull, repetitive, and unchallenging (Chan et al., 2018). Notably, one can experience boredom without being otherwise prone to it (Elpidorou, 2014).

While responses to state boredom can sometimes trigger potentially adaptive outcomes such as increasing prosocial tendencies (Van Tilburg et al., 2017b) and facilitating nostalgia (Van Tilburg et al., 2013), the bulk of research finds it a source or correlate of problematic outcomes, such as impulsiveness and unhealthy food consumption (Moynihan et al., 2017; Moynihan et al., 2015) and even non-suicidal self-injury (Nederkoorn et al., 2016) and sadistic aggression (Pfattheicher et al., 2021). Whether an individual copes with boredom positively or negatively is likely explained by a mixture of individual differences and contextual factors. Nevertheless, research suggests that boredom is so aversive that individuals would rather do something negative than continue being bored (Bench & Lench, 2019; Wilson et al., 2014). Consistently, chronic experiences of boredom are consistently linked to negative individual and societal outcomes (e.g., Lee & Zelman, 2019; Pfattheicher et al., 2021). Boredom proneness is associated with lamentable consequences such as depression symptoms and loneliness (Farmer & Sundberg, 1986; Van Tilburg et al., 2019a). It can also provoke damaging behaviors such as increased alcohol and drug use (Paulson et al., 1990), aggression (Pfattheicher et al., 2021; Van Tilburg et al., 2019a), and impulsivity

(Moynihan et al., 2017). While some researchers have focused on coping with boredom within the education context (Nett et al., 2011; Pekrun et al., 2010), little emphasis has been placed on researching how boredom, in general, can be alleviated despite its ever-growing list of negative outcomes.

Crucially, boredom is a distinct experience that signals a lack of meaning in one's current activity and even a lack of meaning in life (Fahlman et al., 2009; Van Tilburg & Igou, 2012, 2017a, 2019b). These perceptions of meaninglessness are characteristic of both boredom proneness and state boredom (Chan et al., 2018). Meaning perceptions play a key role in the regulation of boredom. People are motivated to maintain the perception that their lives are meaningful. Meaning threats, such as boredom (Moynihan et al., 2021), motivate compensatory behaviors (Heine et al., 2006; Proulx & Inzlicht, 2012) with the prospects of restoring it (Van Tilburg & Igou, 2011; Van Tilburg et al., 2013). Nostalgia, affirmation of heroes, endorsement of political ideologies, and prosocial tendencies have all been shown to increase the perception of meaning in life, and are predicted by boredom experiences (Coughlan et al., 2019; Van Tilburg & Igou, 2016, 2017b; Van Tilburg et al., 2013). Given that boredom is consistently associated with meaninglessness (Fahlman et al., 2009; Van Tilburg & Igou, 2012, 2017a, 2019b), research has recently begun to investigate whether meaningful experiences can reduce boredom and its consequences. This novel work suggests that sources of meaning, for example, religiosity (Van Tilburg et al., 2019b) or self-compassion (O'Dea et al., 2022), buffer against boredom.

Psychological phenomena that encourage people to find meaning may mitigate boredom and its consequences. Gratitude, as an emotion and disposition, is particularly suited for augmenting meaning and reducing boredom. Boredom involves a focus on what is lacking in a situation or in life more generally. A grateful mindset encourages us to notice and appreciate the positive aspects of life (Wood et al., 2010), naturally serving as an incentive to

find meaning in our experiences. This raises the question: Does gratitude, a powerful resource in increasing perceptions of meaning in life, prevent experiences of boredom?

Gratitude: A Meaningful Resource

Akin to boredom, gratitude is a common human experience (Gecewicz, 2015). Broadly defined, gratitude is a habitual focus on and an appreciation of the positive aspects of life (Wood et al., 2010). It can be conceptualized as an emotional response, a mood, or a trait involving an appreciation of what is good in life (Ma et al., 2017). Gratitude is linked to ample psychological, physical, and relational benefits across the lifespan (Portocarrero et al., 2020; Wood et al., 2010). Some of these advantageous outcomes include lower levels of loneliness, better physical health (O'Connell et al., 2016), and reductions in depression (Wood et al., 2008). Crucially, a grateful mindset is linked to greater perceptions of meaning in life (Allan, 2015; Kleiman et al., 2013; Van Tongeren et al., 2016). Put simply, gratitude “provides life meaning by encapsulating life itself as a gift” (Emmons and Shelton, 2002; p. 468). McCullough (2002) proposes that gratitude encourages attentiveness to the good circumstances that come one's way, encouraging the view that one's life is meaningful.

Meaning emerges from the mind's ability to connect things (MacKenzie & Baumeister, 2014), and evaluations of whether one's life and activities are meaningful are widely considered crucial to human experience (Steger et al., 2006). Perceptions of meaning in life can be increased by relying on sources and experiences (King & Hicks, 2021), such as gratitude. We argue that gratitude is particularly suitable for increasing meaning and decreasing boredom. Practicing gratitude allows individuals to find meaning in everyday events and reframe potentially negative situations to find positive meaning in them, too (Wood et al., 2010). Thus, practicing gratitude is incompatible with the onset of negative emotions (Fredrickson, 2001), particularly boredom, given its strong ties to low meaning. This is mirrored in empirical research where gratitude appears to be a protective factor

against suicide risk by regulating meaning perceptions (Kleiman et al., 2013; Schniker et al., 2021). Evidently, being a grateful person and feeling gratitude increases the perception that life is meaningful. Although the present investigation is concerned with the direct relationship between gratitude and meaning, gratitude may increase meaning through two key mechanisms: positive affect and social relationships.

Gratitude, in accordance with the broaden-and-build theory (Fredrickson, 2001), increases positive affect (Layous et al., 2023; Sheldon & Lyubomirsky, 2006). The broaden-and-build theory of positive emotions explains how positive affect generates positive thoughts and actions that *broadened* thinking. While in this state of openness, people may engage in actions that *build* resources to enhance emotional well-being in an upward spiral (Fredrickson, 2001; Fredrickson et al., 2008). According to this theory, positive emotions, through broadened thinking, increase the likelihood of finding positive meaning (Fredrickson, 2001). Gratitude has been found to promote even stronger positive affect than other positive emotions (e.g., Layous et al., 2023; Layous et al., 2017). Gratitude is thus likely to boost meaning in life perceptions through positive affect, a robust and strong predictor of meaning in life (King & Hicks, 2021; King et al., 2006). Further, the find-remind-bind theory of gratitude (Algoe et al., 2008) posits that gratitude promotes and maintains social connections by motivating reciprocity and prosocial behavior (McCullough et al., 2008; Stellar et al., 2017). Social connectedness is one of the most prominent predictors of meaning in life (Lambert et al., 2013; Stavrova & Luhmann, 2016), thus the social integration that gratitude fosters is likely to indirectly increase meaning in life.

Despite many calls for more research into strategies to mitigate boredom (e.g., LePera et al., 2011; Weybright et al., 2020), the current literature's work on protective psychological mechanisms is elusive. However, a large body of work has focused on developing effective gratitude interventions to cultivate a grateful disposition (Boggiss et al., 2020; Wood et al.,

2010). Dovetailing on theoretical and empirical evidence linking meaning perceptions and boredom (Van Tilburg & Igou, 2011; Van Tilburg & Igou, 2012; Van Tilburg et al., 2019b), we theorized that gratitude serves as a psychological resource to reduce boredom, by increasing perceptions of meaning in life, which we refer to as our *existential-buffering hypothesis*. If gratitude helps prevent boredom, then this opens the possibility that these existing gratitude interventions can be directly used to combat boredom and its negative outcomes.

The Present Research

We examined the relationship between gratitude and boredom using an existential approach, that is, considering and integrating perceptions of meaning in life (Steger et al., 2006). Given that boredom features low meaning in life (Van Tilburg & Igou, 2012, 2017a) and gratitude fosters feelings of meaning in life (Kleiman et al., 2013; McCullough, 2003), we reason that meaning in life instilled by gratitude protects against boredom experiences. This assumption rests on research indicating that sources of meaning in life counteract boredom (O’Dea et al., 2022; Van Tilburg et al., 2019b; Van Tilburg et al., 2013). Our *existential-buffering hypothesis* regarding the relationship between gratitude (as the predictor) and boredom (as the criterion) builds on two specific components:

Hypothesis 1: Gratitude predicts less boredom.

Hypothesis 2: Perceptions of meaning in life mediate the relation between gratitude and boredom.

In a series of five studies, we systematically examined these hypotheses by testing the relationship between gratitude and boredom via meaning in life with both correlational and experimental methods. Study 1 provided a preliminary test of the association between dispositional gratitude and boredom proneness. In Study 2a, we tested that perceptions of meaning in life mediate the relation between dispositional gratitude and boredom proneness.

We aimed to replicate Study 2a in Study 2b and test whether the effect of dispositional gratitude on boredom proneness via meaning in life holds while controlling for affect. Study 3 tested dispositional gratitude's effects on experimentally induced boredom via meaning in life. Finally, in Study 4, we examined, using an experimental gratitude induction, whether perceptions of meaning in life mediate the effect of gratitude on boredom. Through the five studies, we aimed to test both dispositional gratitude (Studies 1-3) and state gratitude (Study 4) and provide a comprehensive investigation into the relationship between gratitude and boredom. The studies received approval from the faculty research ethics committee and were programmed with Qualtrics¹. Datasets for all studies are available at the Open Science Framework (<https://osf.io/bygzj/>).

Study 1

In Study 1, we endeavored to establish the direct relationship between dispositional gratitude and boredom proneness. Specifically, we investigated whether grateful people are less prone to boredom.

Method

Participants and Design

We aimed for power $(1 - \beta) = .80$, anticipating a moderate correlation of $\rho = .35$, adopting a Type-I error $\alpha = .05$ (two-tailed). We controlled for potential order effects by assigning participants at random to different orders of the measured constructs. Given that we used order variations and online studies are prone to dropouts (e.g., Arechar et al., 2018), we exceeded the required sample size.

¹ In Study 2-4, we also tested a secondary process assumption by measuring the search for meaning in life (Steger et al., 2006), a motivated cognitive process to reestablish meaning. Given that boredom is an established precursor to the search for meaning (e.g., Van Tilburg et al., 2019b), if gratitude prevents boredom, we expect that it reduces the subsequent search for meaning that boredom otherwise instigates to further validate the existential process we propose. The results of testing the full sequential mediational model with search for meaning included can be found for Studies 2-4 in supplementary materials.

Accordingly, we required a sample of 59 participants (Faul et al., 2007). Ninety-two participants were recruited on Amazon's Mechanical Turk (MTurk; www.mturk.com), a crowdsourcing platform. Ten participants failed the attention check, and one participant was excluded from the analyses because of the speed in response behavior (50 seconds spent on all materials, including the consent form; vs. $M = 327$ seconds), raising doubt in the comprehension of the materials. Thus, 81 participants (47 male, 34 female) between the ages of 21 to 69 years ($M_{\text{age}} = 36.70$, $SD = 12.30$), overwhelmingly US Americans (79 US Americans, 1 Mexican, 1 Indian), were included in the analyses.

Procedure and Materials

After giving informed consent, participants completed an attention check. They had to identify the topic of the study given to them earlier between two options presented to them. A false response led to the termination of the study. Afterward, participants reported demographics regarding their age, gender, and nationality.

The Gratitude Resentment and Appreciation Test-Revised Short form (GRAT-RS; Watkins et al., 2003) was used to measure individuals' dispositional gratitude. The GRAT-RS consists of 16 items (e.g., 'Life has been good to me'; 1 = *strongly disagree*, 9 = *strongly agree*) with five reversed items (e.g., 'More bad things have happened to me in my life than I deserve'; $\alpha = .88$). Boredom proneness was measured across two different scales to test the robustness and scale independence of the associations with gratitude. Specifically, we used the shortened form of the Boredom Proneness Scale (BPS-SF; Struk et al., 2015), an 8-item measure (e.g., 'I often find myself at 'loose ends' not knowing what to do'; 1 = *strongly disagree*, 7 = *strongly agree*; $\alpha = .92$). Afterward, participants completed a measure that addresses boredom directly, the Harthouse Boredom Proclivity Scale (HBPS; Van Tilburg et al., 2019b). The scale contains four items ('How prone are you to feeling bored?'; $\alpha = .94$) to which participants respond to the first three items on a scale ranging from 1 (*not at all*) to 7

(*very much*). The fourth item asked participants, ‘Specifically, how often do you feel bored?’, using a scale from 1 (*once or twice a year*) to 7 (*at least once a day*). We included both scales as the BPS-SF does not explicitly address boredom, thus we incorporated the HBPS which assesses boredom more directly. Participants were debriefed and remunerated for their participation.

Results and Discussion

Following the approach of Van Tilburg et al. (2019b) and given the high correlation of the BPS-SF and the HBPS, $r(79) = .66, p < .001$, the two scales were combined and averaged to create one boredom index (BOR-I). Gratitude was highly negatively correlated with BOR-I, $r(79) = -.58, p < .001$, and with each boredom measure, $r(79) = -.54, p < .001$ (BPS-SF) and $r(79) = -.52, p < .001$ (HBPS). We also controlled for the order of the gratitude and boredom measures. The correlation between gratitude and BOR-I remained significant, $r_{ab.c}(78) = -.58, p < .001$, when controlling for order.

The results of Study 1 confirm Hypothesis 1 that grateful people are less prone to boredom. After we established this negative association between dispositional gratitude and boredom proneness, we needed to further understand this relationship. In Studies 2a and 2b, we thus investigated the mediating role of perceptions of meaning in life (Hypothesis 2).

Studies 2a and 2b

Studies 2a and 2b aimed to replicate and extend the findings of Study 1 by testing whether this negative association between dispositional gratitude and boredom proneness was mediated by perceptions of meaning in life (Study 2a & 2b). In both studies, we tested whether dispositional gratitude would predict reduced boredom proneness via meaning in life. Study 2b included a control measure of general affect as gratitude has been found to lower negative affect and foster positive affect (Layous et al., 2022). This was to highlight the

unique effect of dispositional gratitude on boredom via meaning, separate from general positivity or negativity.

Method

Participants and Design

Both studies aimed for power $(1 - \beta) = .80$, anticipating a moderate correlation of $\rho = .35$, adopting a Type-I error $\alpha = .05$ (two-tailed). Given that online studies are prone to dropouts (e.g., Arechar et al., 2018), we exceeded the required sample sizes.

Study 2a. Study 2a required 120 participants (Schoemann et al., 2017), estimated with 1,000 replications using 20,000 Monte-Carlo draws. One hundred and eighty-eight participants were recruited on MTurk. We controlled for potential order effects by assigning participants at random to different orders of the measured constructs. Twelve participants did not pass the attention check and were automatically excluded, leaving a total of 176 participants (105 male, 71 female) between the ages of 19 to 78 years ($M_{\text{age}} = 40.91$, $SD = 14.26$), overwhelmingly US Americans (173 US Americans, 1 Canadian, 1 Finnish, 1 Russian).

Study 2b. Study 2b required 230 participants (Schoemann et al., 2017; 1,000 replications with 20,000 Monte-Carlo draws). Two hundred and ninety-three participants were recruited on MTurk. Thirty-nine participants failed the attention check and were thus automatically excluded from the study. One participant was excluded from the analyses because their response behavior (single responses to questions) raised doubt about their commitment. This resulted in a total of 253 participants (120 men, 132 women, 1 non-binary; $M_{\text{age}} = 38.87$, $SD = 12.88$, range = 20-78), with all of them being US Americans except for one Nepalese, one Sri Lankan, and two Indians.

Procedure and Materials

After giving informed consent, participants completed the same attention check as in Study 1. Afterward, participants reported demographics regarding their age, gender, and nationality. They then filled out the associated measures; gratitude, boredom, and meaning in life (Study 2a & 2b), and positive and negative affect (Study 2b). After all measures were completed, participants were debriefed and remunerated for their participation.

Study 2a. In this study, participants completed a different measure of gratitude to Study 1, to generalize the relation across operationalization's of gratitude. While the GRAT-RS measures a sense of abundance in life and appreciation of others (Thomas & Watkins, 2003), the GQ6 measures the intensity, frequency, density, and span of gratitude experiences (McCullough et al., 2002). The Gratitude Questionnaire (GQ6; McCullough et al., 2002; e.g., 'I am grateful to a wide variety of people'; $\alpha = .89$), with scales ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). They then completed the 5-item Presence of Meaning in Life subscale of the Meaning in Life Questionnaire (Steger et al., 2006; MP-MLQ; e.g., 'I understand my life's meaning'; $\alpha = .94$) with scales ranging from 1 (*absolutely untrue*) to 7 (*absolutely true*). As in Study 1, participants completed the BPS-SF ($\alpha = .93$) and the HBPS ($\alpha = .95$).

Study 2b. Participants completed measures of gratitude and boredom; the GRAT-RS (Watkins et al., 2003; $\alpha = .90$; Study 1), the BPS-SF (Struk et al., 2015; $\alpha = .91$), and the HBPS (Van Tilburg et al., 2019b; see Study 1; $\alpha = .96$). Afterwards, participants filled out the MP-MLQ (Study 2a; $\alpha = .95$). Lastly, we measured participants' affect using the 20-item Positive and Negative Affect Schedule (PANAS; Watson et al., 1988; e.g., 'Indicate the extent to which you feel distressed'; 1 = *very slightly or not at all*, 5 = *extremely*; $\alpha = .92$ for the positive subscale; $\alpha = .94$ for the negative subscale).

Results

Study 2a

Gratitude correlated positively with meaning in life and negatively with boredom (see Table 1), as expected. To test that the negative association between gratitude and boredom is attributable to their shared relation to presence of meaning in life, we employed Model 4 from PROCESS (Hayes, 2018) with 10,000 bootstraps, using gratitude as the predictor, meaning presence as the mediator, and the boredom as the criterion. Gratitude predicted higher meaning presence, $B = 0.780$, $SE = 0.080$, $t(174) = 9.743$, $p < .001$, 95% CI [0.622, 0.938]. Meaning presence predicted reduced boredom, $B = -0.137$, $SE = 0.044$, $t(173) = -3.091$, $p = .002$, 95% CI [-0.224, -0.049]. We observed a negative total effect of gratitude on boredom, $B = -0.412$, $SE = 0.048$, $t(174) = -8.599$, $p < .001$, 95% CI [-0.506, -0.317]. This effect was comprised of a direct effect of gratitude on boredom, $B = -0.305$, $SE = 0.058$, $t(173) = -5.249$, $p < .001$, 95% CI [-0.420, -0.190], and a negative indirect effect of gratitude on meaning presence through presence of meaning in life, $B = -0.107$, $SE = 0.036$, 95% CI [-0.178, -0.037] (Figure 1).

Study 2b

Consistently, boredom measures were highly correlated (see Table 2) and aggregated into a boredom index. To test the role of presence of meaning in life, we used PROCESS (Hayes, 2018) Model 4 with 10,000 bootstraps. Dispositional gratitude significantly predicted meaning presence, $B = 0.657$, $SE = 0.067$, $t(251) = 9.86$, $p < .001$, 95% CI [0.526, 0.789]. Meaning presence was significantly and negatively associated with boredom proneness, $B = -0.301$, $SE = 0.052$, $t(250) = -5.764$, $p < .001$, 95% CI [-0.404, -0.198]. The total effect of dispositional gratitude on boredom proneness was significant, $B = -0.497$, $SE = 0.059$, $t(251) = -8.468$, $p < .001$, 95% CI [-0.612, -0.381]. It was comprised of a significant direct effect of dispositional gratitude on boredom proneness, $B = -0.294$, $SE = 0.065$, $t(250) = -4.590$, $p <$

.001, 95% CI [-0.427, -0.170], and a significant indirect effect through meaning presence, $B = -0.198$, $SE = 0.042$, 95% CI [-0.279, -0.116] (Figure 2).

As reflected in Table 2, positive and negative affect scores, as measured by the PANAS subscales (PA and NA), correlated significantly with all variables of the study. We included these scores as covariates in the mediation model to test if the key mediational paths would remain significant. The indirect association between gratitude and boredom via meaning presence remained significant, $B' = -0.042$, $SE = 0.020$, 95% CI [-0.084, -0.007] when controlling for affect.

Discussion

Studies 2a and 2b replicated the finding from Study 1 that grateful people are less prone to boredom (Hypothesis 1). This negative relationship between dispositional gratitude and boredom proneness is consistent across two different measures of gratitude and irrespective of order variations. Crucially, the findings of Studies 2a and 2b support the prediction that grateful people are less prone to boredom (Hypothesis 1), and this reduction is mediated by the greater meaning in life that grateful people experience (Hypothesis 2). We conclude that the mediation is robust and holds for various gratitude measures. Study 2b found that positive and negative affect did not account for the results, indicating that specifically dispositional gratitude, rather than general positivity or negativity, predicts less boredom via meaning in life. We conclude that grateful people are less prone to boredom as they experience greater meaning in life. Studies 2a and 2b examined mediation with correlational designs, which provides a basis for our theoretical model; however, to strengthen our claims, we sought to examine our hypotheses with experimental designs in the remaining studies. In Study 3, we aimed to examine if dispositional gratitude would buffer against state experiences of boredom.

Study 3

In Study 3 we tested whether dispositional gratitude also predicts less boredom in the moment. Grateful people are less prone to boredom as they possess greater perceptions of meaning in life. We expected that the heightened perceptions of meaning grateful people experience would mean they also experience less state boredom. Our rationale and design built on earlier research (Van Tilburg et al., 2019b) that demonstrated how an individual difference (e.g., in religiosity) could reduce overall levels of state boredom independent of induced variations in boredom. We expected reductions in state boredom would be robustly rooted in gratitude and its associated meaning in life, across contextual sources of state boredom.

Method

Participants and Design

To achieve a power of $(1 - \beta) = 0.80$ for the detection of correlations sized $\rho = .35$ of ($\alpha = .05$, two-tailed), we required a sample of 210 participants (Schoemann et al., 2017). Two hundred and twenty-four participants were recruited on MTurk. Eighteen participants did not pass the attention check and were excluded from the study. The others were randomly assigned to two conditions of a between-subjects design: high versus low boredom. Six participants were excluded from the analyses, with five who did not complete the boredom task², and one was a clear outlier in completing the study by taking 39.43 minutes ($M = 8.55$ minutes for all participants). This left us with a sample of $N = 200$ participants (93 males, 106 females, 1 non-binary) between the ages of 19 and 78 years ($M_{\text{age}} = 41.85$, $SD = 13.05$), with

² Of these five participants, one participant from the low boredom condition did not transcribe the reference, one participant in the high boredom condition responded with ‘no’ to every reference, and the other three participants transcribed only certain aspects of each reference, such as an author surname.

all but four participants (1 Bahamian, 1 Irish, 1 Nepalese, 1 Russian) identifying as US Americans.

Materials and Procedure

After giving informed consent, passing the initial attention check, and reporting their demographics, participants completed the GRAT-RS ($\alpha = .89$; Watkins et al., 2003; see Study 1). We then measured presence of meaning in life with the MLQ (MP-MLQ; $\alpha = .96$; Steger et al., 2006; see Study 2). In this study, we employed an additional attention check (i.e., ‘What month is it?’). Next, depending on random assignment, participants engaged in either a high or low boredom task to induce variance in state boredom. Adopting a writing references task to manipulate state boredom (Moynihan et al., 2017), those in the high boredom condition transcribed six references to literature about ‘pastel’ exactly as they appeared, while the low boredom condition had to transcribe one such reference.

Immediately after the boredom task, participants completed three items measuring state boredom (e.g., ‘How bored do you feel at the moment?’, 1 = *not at all*, 7 = *very much*; $\alpha = .93$; SBOR; Van Tilburg et al., 2013). Participants were then debriefed and remunerated for their participation.

Results

A one-way ANOVA with the boredom manipulation as an independent variable and state boredom as the dependent variable indicates that the high boredom condition increased state boredom compared to the low boredom condition ($M = 3.69$, $SD = 1.86$ vs. $M = 4.67$, $SD = 1.90$), $F(1, 198) = 13.44$, $p < .001$, $\eta^2 = .06$.

Table 3 displays the correlations between gratitude, meaning presence, state boredom, and meaning search. We tested the mediation effect of gratitude on state boredom through perceived meaning in life using PROCESS (Hayes, 2018) Model 4 with 10,000 bootstraps. Dispositional gratitude was significantly associated with meaning presence, $B = 0.709$, $SE =$

0.084, $t(198) = 8.408$, $p < .001$, 95% CI [0.543, 0.875]. Meaning presence predicted state boredom negatively, $B = -0.332$, $SE = 0.086$, $t(197) = -3.858$, $p < .001$, 95% CI [-0.501, -0.162]. The total association between gratitude and state boredom was significant and negative, $B = -0.389$, $SE = 0.105$, $t(198) = -3.690$, $p < .001$, 95% CI [-0.597, -0.181]. The direct effect of gratitude on meaning presence was not significant, $B = -0.154$, $SE = 0.119$, $t(197) = -1.298$, $p = .196$, 95% CI [-0.388, 0.800]; however, we observed a significant indirect effect of gratitude on state boredom through meaning presence, $B = -0.235$, $SE = 0.065$, 95% CI [-0.374, -0.116] (Figure 3).

Additional Analyses. We included the boredom manipulation (dummy coded) as a covariate in Model 4 testing if variations in state boredom were independently and reliably predicted by individual differences in gratitude and meaning presence. The indirect association between dispositional gratitude and state boredom through meaning presence remained significant when controlling for the boredom manipulation, $B' = -0.212$, $SE = 0.066$, 95% CI [-0.346, -0.091].

Discussion

Study 3 conceptually replicates the effects demonstrated in Studies 1-2 for state boredom. The results of this study confirmed that grateful people experience less state boredom (Hypothesis 1), and this relationship is mediated by the heightened presence of meaning grateful people tend to experience (Hypothesis 2). These effects were independent of contextual variations that affected state boredom. Overall, Study 3 lends further support to the hypothesis that grateful people tend to experience greater meaning in life, and this not only makes them less prone to boredom, but they are also less vulnerable to momentary experiences of boredom, across more boring or less boring activities. Variations in boredom experiences are partly, yet reliably, rooted in individual differences in gratitude.

Nevertheless, to make causal claims about the effect of gratitude on boredom, we needed to experimentally manipulate gratitude, which we aimed to do in Study 4.

Study 4

Studies 1-3 examined the relationship between dispositional gratitude and boredom. Study 4 was designed to test if the proposed effects would hold if we manipulated gratitude. That is, we examined the impact of momentary experiences of gratitude on state boredom. To test whether state gratitude would reduce boredom through state meaning in life, we experimentally induced gratitude (vs. control) with a writing task and measured gratitude, presence of meaning, and boredom at the state level.

Method

Participants and Design

In our estimate, to achieve a power of $(1 - \beta) = 0.80$, we required a sample of approximately 250 participants, anticipating a moderate correlation of $\rho = .35$, adopting a Type-I error $\alpha = .05$ (two-tailed; Schoemann et al., 2017). Two hundred and forty-five participants were recruited on MTurk. One participant did not provide consent and was thus excluded from the study, leaving a total of 244 participants (122 males, 120 females, 2 non-binary) between the ages of 19 and 75 years ($M_{\text{age}} = 39.37$, $SD = 13.56$). All participants were US Americans except for eight participants (1 of each; Chinese, Ghanaian, Korean, Malaysian, Mexican, Moroccan, Venezuelan, Vietnamese).

Materials and Procedure

After giving informed consent and reporting their demographics (see Study 1), participants were randomly assigned to either the gratitude ($n = 131$) or control condition ($n = 113$). Specifically, we adopted a standard experimental gratitude induction by Watkins et al. (2003; Study 4). Participants in the gratitude condition received the following instruction: ‘Describe someone living for whom you are grateful and why you are grateful’. In the control

condition, participants were asked to do the following: ‘Describe the layout of your living room and why it has this layout’. We asked participants to provide sufficient detail on each writing instruction. Participants could not continue the study until at least 90 seconds had passed on the writing exercise. We then used a modified version of the Gratitude Adjective Checklist (McCullough et al., 2002) as a measure of state gratitude ($\alpha = .93$). Specifically, participants were asked to indicate the degree to which they felt ‘grateful’, ‘thankful’, and ‘appreciative’ ‘right now, at the moment’ (1 = *not at all*, 7 = *extremely*). We then measured the state of presence of meaning in life with a modified version of the 5-item subscale from the MLQ ($\alpha = .92$; SMP-MLQ; Steger et al., 2006). To stress the state character, we included in the instruction that participants should report how they felt in this moment, and each of the items started with reference to the current moment (‘In this moment, I understand my life’s meaning’).

Afterward, we included a filler task to prevent reflections on the key tasks’ association and potential demand characteristics. Specifically, we presented a picture of a Volkswagen Polo and had participants evaluate it using four items (e.g., ‘How much do you like the color of this car?’; 1 = *not at all*, 7 = *very much*). Then, we measured state boredom using the 3-item measure as in Study 3 ($\alpha = .95$; SBOR) and the Multidimensional State Boredom Scale’s (Fahlman et al., 2013) 8-item short version (MSBS-SF; Hunter et al., 2016), which is an efficient unidimensional measure that distinguishes those who are more bored from those who are less bored (Donati et al., 2021; Hunter et al., 2016; e.g., ‘Time is passing by slower than usual’; 1 = *strongly disagree*, 7 = *strongly agree*; $\alpha = .94$)³. Finally, participants were debriefed and remunerated for their participation.

³ The name of the scale is based on the full multidimensional state boredom scale. However, it functions best as a unidimensional measure integrating disengagement (5 items), inattention (2 items) and time perception (1 item), rather than assessing 5 dimensions as the original 29-item scale (Donati et al., 2021; Hunter et al., 2016).

Results

Based on high correlation (Table 4) and the same rationale as Studies 1-3, we created an index for state boredom (SBOR-I) comprised of the two highly correlated state boredom measures. We used ANOVAs to examine the effects of the independent variable on state gratitude, state meaning presence, and state boredom. The gratitude manipulation was successful; participants in the gratitude condition reported higher levels of state gratitude than in the control condition ($M = 6.36, SD = 1.04$ vs. $M = 5.17, SD = 1.61$), $F(1, 242) = 48.32, p < .001, \eta^2 = .17$. In the gratitude condition participants reported higher levels of state meaning presence than in the control condition ($M = 5.32, SD = 1.56$ vs. $M = 4.65, SD = 1.60$), $F(1, 242) = 10.86, p = .001, \eta^2 = .04$, and we found lower levels of boredom (SBOR-I) for participants in the gratitude condition versus those in the control condition ($M = 2.80, SD = 1.59$ vs. $M = 3.37, SD = 1.60$), $F(1, 242) = 7.76, p = .006, \eta^2 = .03$.

We tested the mediation effect of gratitude on boredom through meaning presence with the gratitude manipulation (dummy coded) as the predictor variable, state gratitude and state meaning presence as mediators, and SBOR-I as the criterion variable using PROCESS (Hayes, 2018) Model 6 with 10,000 bootstraps. The gratitude manipulation significantly predicted state gratitude, $B = 1.190, SE = 0.171, t(242) = 6.95, p < .001, 95\% CI [0.853, 1.528]$. State gratitude was significantly associated with state meaning presence, $B = 0.517, SE = 0.068, t(241) = 7.57, p < .001, 95\% CI [0.383, 0.652]$, while the gratitude manipulation did not have a significant association with state meaning presence, $B = 0.051, SE = 0.1994, t(241) = 0.252, p = .802, 95\% CI [-0.343, 0.443]$. State gratitude was significantly and negatively associated with SBOR-I, $B = -0.217, SE = 0.079, t(240) = -2.76, p = .006, 95\% CI [-0.372, -0.062]$, and state meaning presence predicted SBOR-I negatively, $B = -0.290, SE = 0.067, t(240) = -4.344, p < .001, 95\% CI [-0.422, -0.159]$. The total effect of the gratitude manipulation on SBOR-I was significant and negative, $B = -0.571, SE = 0.205, t(242) = -$

2.78, $p = .006$, 95% CI [-0.975, -0.167]. The direct effect of the gratitude manipulation on SBOR-I was rendered non-significant, $B = -0.120$, $SE = 0.21$, $t(240) = -0.579$, $p = .563$, 95% CI [-0.527, 0.288].

Concerning the indirect effects, we found that the gratitude manipulation predicted SBOR-I through state gratitude, $B = -0.258$, $SE = 0.096$, 95% CI [-0.457, -0.083]; it did not predict SBOR-I through state meaning presence, $B = -0.015$, $SE = 0.056$, 95% CI [-0.117, 0.106]; however, it did predict SBOR-I through state gratitude and state meaning presence, $B = -0.179$, $SE = 0.055$, 95% CI [-0.302, -0.088] (Figure 4).

Discussion

We examined if the pattern of results observed in Studies 1-3 would hold for experimentally induced gratitude, meaning presence, and boredom at the state level. Consistent with Hypothesis 1 and Hypothesis 2, the gratitude induction increased state meaning and reduced state boredom. The reduction of state boredom can be attributed to the increase in state meaning in life imbued by gratitude, confirming our Hypothesis 2. In sum, these results support the notion that gratitude has a causal effect on boredom, as per the adoption of an experimental design. Further, our hypotheses were replicated once more using another measure of gratitude, an adaptation of the Gratitude Adjective Checklist (McCullough et al., 2002), demonstrating that our findings are robust across various operationalizations of gratitude. Inducing gratitude via a simple writing task appears to prevent momentary experiences of boredom, and this is mediated by increased state perceptions of meaning in life.

General Discussion

Boredom is an uncomfortable experience accompanied by perceptions of meaninglessness (Van Tilburg & Igou, 2012). Conversely, gratitude is an inherently pleasant experience that can provide enhanced meaning in life (Bono & Sender, 2018; McCullough,

2002). In four studies, we tested our *existential-buffering hypothesis* that gratitude prevents boredom by imbuing life with meaning. All four studies consistently supported Hypothesis 1 and Hypothesis 2; gratitude predicts less boredom, and this relationship is mediated by perceptions of meaning in life. Studies 1-3 elucidate how the relatively stable characteristics of dispositional gratitude and meaning presence affect both chronic and state boredom. The results of Study 4 go beyond prior research by demonstrating that experimentally induced gratitude can increase meaning, thus preventing boredom. Across all studies, we found these effects were consistent with our hypotheses for three different gratitude measures, indicating generalizability across different operationalizations of the construct. They were independent of the order of the measures (Study 1 & 2a) and positive or negative affect (Study 2b). Further, these effects were present for chronic and temporary experiences of gratitude, boredom, and meaning presence.

We also examined a secondary process, involving the role of search for meaning, and these results are outlined in detail in supplementary materials. All studies examining the role of search for meaning, supported the hypothesis that when boredom is reduced by increases in meaning imbued by gratitude, meaning search is consequently reduced, supporting the findings of earlier research that documents an association between boredom and meaning search (Van Tilburg & Igou., 2011, 2019; Van Tilburg et al., 2013). These findings more generally confirm the theoretical proposition that boredom is an existential experience regulated by meaning perceptions.

Our research strengthens the theoretical perspective that boredom's crucial psychological characteristics can and should be conceptualized in terms of meaning-regulation processes (Van Tilburg & Igou, 2011, 2012, 2017a) and that sources of meaning can attenuate boredom (O'Dea et al., 2022; Van Tilburg et al., 2019b). Specifically, this research provides correlational and experimental evidence supporting the notion that

possessing a source of meaning in life can hinder boredom experiences (Van Tilburg et al., 2019b). Research has consistently demonstrated the key role that meaning plays in the experience of boredom (Chan et al., 2018; Van Tilburg & Igou, 2012; Van Tilburg & Igou, 2017a). However, this research is the first to demonstrate that a positive emotion (i.e., gratitude) can affect boredom's appearance and intensity by augmenting meaning in life in advance. Our findings strengthen the notion that perceiving life as meaningful is a central human need and that psychological processes serve this need (Heine et al., 2006; Proulx & Inzlicht, 2012). This is consistent with research that shows that meaning in life is a commonplace experience and can be fostered through ostensibly simple and mundane processes (e.g., Heintzelman & King, 2019), like practicing gratitude.

Boredom is widespread (Chin et al., 2017) and poses threats both to the individual and those around them. While we acknowledge that momentary instances of boredom can sometimes stimulate productive endeavors (e.g., prosocial behavior; Van Tilburg & Igou, 2017b), state boredom can often provoke extremely maladaptive behaviors such as self-injury (Yusoufzai et al., 2022) and sadistic behavior (Pfattheicher et al., 2021). Unresolved, chronic boredom is consistently linked to negative well-being outcomes (Goldberg et al., 2011). Previous researchers have suggested that targeting life meaning could be an effective method to ameliorate boredom experiences (Fahlman et al., 2009), and positive emotions are particularly apt for generating meaning (Fredrickson, 2001; King et al., 2006); however, scant empirical evidence has been presented to support this claim. O'Dea et al. (2022) found that self-compassion reduces boredom via greater meaning in life; however, the studies were based on correlational evidence. The present research provides the primary indication that gratitude, a positive and meaningful emotion, plays a causal role in reducing and preventing boredom. Given the universality of these experiences, these findings can have practical utility in a range of contexts and across ages. For instance, research indicates that children and

adolescents experience gratitude (Froh et al., 2008; Layous & Lyubomirsky, 2014) and boredom in youth is both common and problematic (Weybright et al., 2020). Future research would do well to explore the relationship between gratitude and boredom in the context of children and adolescents.

Positive relations between gratitude, meaning in life, and overall well-being have been well-documented (Kleiman et al., 2013; Ma et al., 2017; Wood et al., 2010). Our research adds that gratitude also shields the individual from boredom, thus enhancing our understanding of gratitude's functionality. These findings strengthen the notion that gratitude buffers against experiences that threaten people's sense of meaning in life (Kleiman et al., 2013; Schnitker et al., 2021). Schnitker et al. (2021) find that gratitude moderates the relationship between meaninglessness and suicide risk. Similarly, we find that gratitude prevents a meaning threat (i.e., boredom), by providing the perception that life is meaningful.

Limitations and Future Research

People can cultivate a grateful disposition, even if it is not their inclination. There is an urgency to develop effective strategies to cope with boredom, given the ever-growing list of problematic consequences. This research is the first step towards proposing practicing gratitude as a fruitful method for mitigating boredom and its associated outcomes. In the present research, we examined the effects of dispositional and temporary gratitude on the presence of meaning in life and boredom. Gratitude is a malleable personality trait that can be fostered through simple journal exercises and interventions (e.g., Emmons & McCullough, 2003; O'Connell et al., 2017) as a means to increase meaning in life. These practices are brief, can be easily self-administered, and are low-cost (Lyubomirsky & Layous, 2013). While we have experimental evidence for the effect of gratitude on boredom, we did not test the durability and long-term effects of gratitude. A future longitudinal study testing the

effects of a gratitude intervention on boredom would be of profound importance to strengthen our causal argument and propel the practical relevance of this research.

Second, as our study contained mainly participants who identified as US Americans, future studies should also investigate the claims using a more culturally diverse sample to control for any other cultural differences that may be at play. For example, research comparing gratitude in the UK and the US suggests that gratitude may have a common core with culturally ambivalent features but also has socially constructed elements relevant to individual cultures (Morgan et al., 2014). Third, our studies were administered online and cross-sectionally, which comes with limitations (e.g., Zhou & Fishbach, 2016). Although we used attention checks and replicated the results across our five studies, further validation using other methods is needed, for example, with offline samples and experience sampling studies.

Fourth, although our indirect effects analyses test a process model based on an empirically consistent and theoretically rich model, we cannot be certain of the causal sequence of meaning in life and boredom because both variables were measured cross-sectionally and not manipulated. Future researchers should examine the temporal relationship between boredom and meaning in life within a longitudinal framework to further test the mediational model.

Fifth, we only employed one gratitude-eliciting manipulation in the current investigation, which involves reflecting on a relationship with an individual that you are grateful for (Watkins et al., 2003). Gratitude and social relationships are closely linked (Algoe, 2012; Wood et al., 2008), and reflecting on social relationships may also drive the effect on meaning and boredom. We recommend testing a non-social gratitude condition (e.g., counting blessings; Seligman et al., 2005) as an important comparison condition for future directions of this research. In addition, different gratitude manipulations may function

differently over time. For instance, some gratitude manipulations can have long-lasting effects (e.g., Seligman et al., 2005), while others do not last beyond a week (Layous et al., 2023). Testing different gratitude manipulations is necessary to generalize our findings.

Lastly, for a positive activity—like a gratitude intervention—to have the most positive impact on well-being, it is important to consider the person-activity fit (Lyubomirsky & Layous, 2013). According to the person-activity fit model (Lyubomirsky & Layous, 2013), people’s motivations, beliefs, efforts, and personality will affect how effective a gratitude intervention is for boredom-prone individuals. Future research may wish to target these factors to understand how interventions can be tailored to maximize benefit for the individual.

Conclusion

Sifan Hassan may not have realized it, but our findings suggest that by practicing gratitude throughout her debut marathon, she was finding meaning in the challenge and protecting herself from boredom. Across a series of five studies with small but crucial variations in procedures and measures, we consistently found that dispositional gratitude is associated with both less trait boredom (Studies 1 & 2) and state boredom (Study 3), and experimentally induced gratitude reduces state boredom (Study 4). This negative relationship was consistently mediated by greater presence of meaning in life. We conclude that gratitude is a resource that can reduce boredom by increasing our perceptions of meaning in life, either situationally or globally. The research advances the burgeoning evidence indicating that sources of meaning can buffer against boredom. Further investigation into the utility of gratitude to combat boredom could reap ample benefits across a wide range of contexts in everyday life.

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Table 1*Correlation Matrix of Measures in Study 2a*

Measure	1	2	3	4	5
1 GQ6	1	.59***	-.57***	-.45***	-.55***
2 MP-MLQ		1	-.50***	-.39***	-.48***
3 BPS-SF			1	.74***	.93***
4 HBPS				1	.93***
5 BOR-I					1

Note. *** $p < .001$. GQ6 = The Gratitude Questionnaire; MP-MLQ = Meaning Presence from MLQ; BPS-SF = Shortened Boredom Proneness Scale; HBPS scale = Harthouse Boredom Proclivity Scale; BOR-I = Boredom Index (BPS-SF and HBPS aggregate).

Table 2*Correlation Matrix of Measures in Study 2b*

Measure	1	2	3	4	5	6	7
1 GRAT-RS	1	.53***	-.52***	-.38***	-.47***	-.41***	.48***
2 MP-MLQ		1	-.52***	-.44***	-.51***	-.43***	.64***
3 BPS-SF			1	.77***	.93***	.66***	-.41***
4 HBPS				1	.95***	.51***	-.34***
5 BOR-I					1	.61***	-.40***
6 NA						1	-.29***
7 PA							1

Note. * $p < .05$. *** $p \leq .001$. GRAT-RS = Gratitude Resentment and Appreciation Test

Revised Short Form; MP-MLQ = Meaning Presence form MLQ; BPS-SF = Shortened

Boredom Proneness Scale; HBPS = Harthouse Boredom Proclivity Scale; BOR-I = Boredom

Index (BPS short and HBPS scale aggregate); NA = Negative Affect form PANAS; PA =

Positive Affect from PANAS.

Table 3*Correlation Matrix of Measures in Study 3*

Measure	1	2	3
1 GRAT-RS	1	.51***	-.25***
2 MP-MLQ		1	-.35***
3 SBOR			1

Note. * $p < .05$. *** $p < .01$. GRAT-RS = Gratitude Resentment and Appreciation Test Revised Short form; MP-MLQ = Meaning Presence from MLQ; SBOR = State Boredom Index.

Table 4*Correlation Matrix of Measures in Study 4*

Measure	1	2	3	4	5
1 SGAC	1	.48***	-.36***	-.30***	-.35***
2 SMP-MLQ		1	-.33***	-.42***	-.39***
3 SBOR			1	.81***	.96***
4 MSBS-SF				1	.94***
5 BOR-I					1

Note. *** $p \leq .001$. SGAC = State Gratitude Adjective Checklist; SMP-MLQ = State Meaning Presence form MLQ (Adjusted); SBOR = State Boredom; MSBS-SF = Multidimensional State Boredom Scale Short Form; BOR-I = Boredom Index (SBOR and MSBS-SF aggregate).

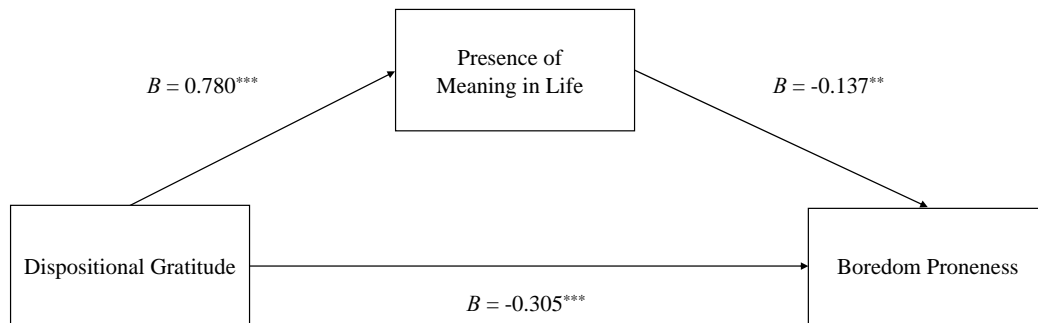
Figure 1. Sequential Path Model for Study 2a

Figure 1: Dispositional gratitude, meaning presence, and boredom proneness $^{**} p < .05$, $^{***} p \leq .001$. Indirect effect: $B = -0.109$, $SE = 0.025$, 95% CI $[-0.159, -0.061]$.

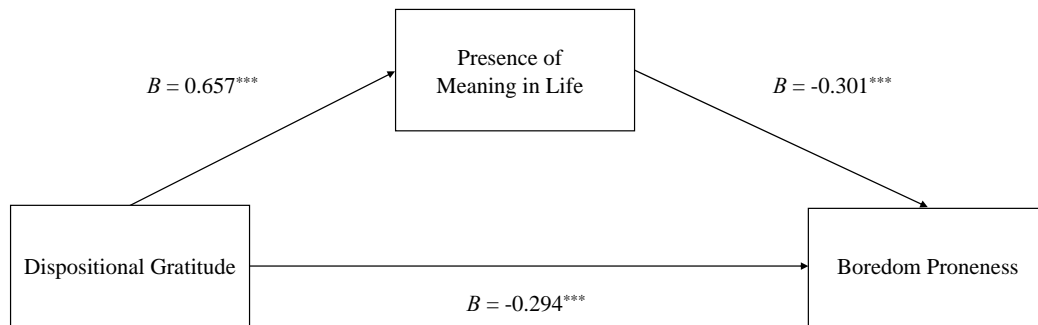
Figure 2. Sequential Path Model for Study 2b

Figure 2: Gratitude, meaning presence, state boredom, and state meaning search. ^{***} $p \leq .001$.

Indirect effect: $B = -0.198$, $SE = 0.042$, 95% CI $[-0.279, -0.116]$.

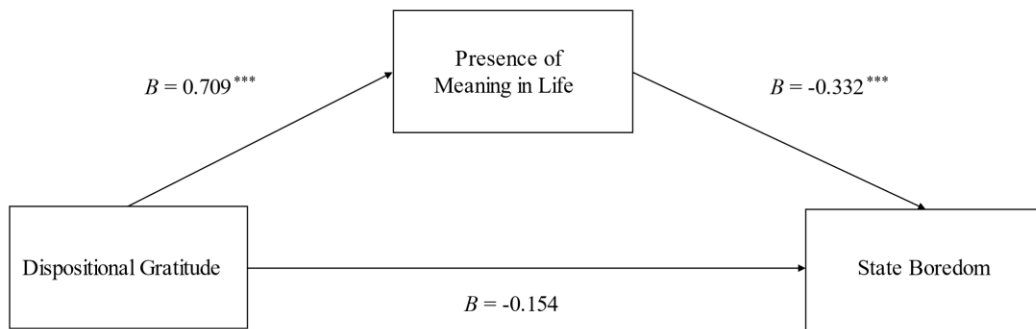
Figure 3. Sequential Path Model for Study 3

Figure 3: Dispositional gratitude, meaning presence, and state boredom. * $p < .05$, ** $p < .01$;

*** $p \leq .001$. Indirect effect: $B = -0.235$, $SE = 0.065$, 95% CI $[-.374, -0.116]$.

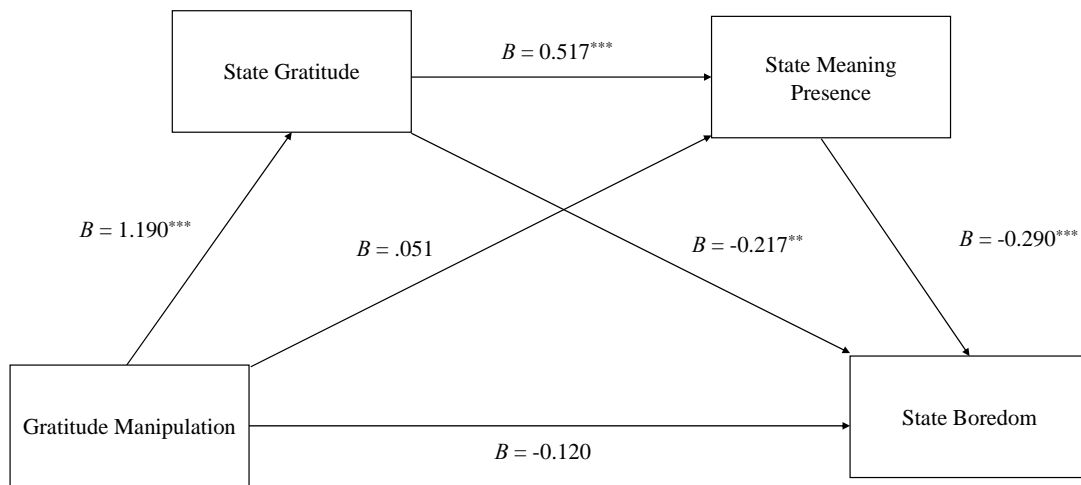
Figure 4. Sequential Path Model for Study 4

Figure 4: Gratitude manipulation, state gratitude, state meaning presence, and state boredom.

$p < .05$, $^{**} p < .01$; $^{***} p \leq .001$. Indirect effect: $B = -0.179$, $SE = 0.055$, 95% CI [-0.302, -0.088].