

# On Boredom and Social Identity: A Pragmatic Meaning-Regulation Approach

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Wijnand A. P. van Tilburg<sup>1</sup> and Eric R. Igou<sup>1</sup>

## Abstract

People who feel bored experience that their current situation is meaningless and are motivated to reestablish a sense of meaningfulness. Building on the literature that conceptualizes social identification as source of meaningfulness, the authors tested the hypothesis that boredom increases the valuation of ingroups and devaluation of outgroups. Indeed, state boredom increased the liking of an ingroup name (Study 1), it increased hypothetical jail sentences given to an outgroup offender (Study 2 and Study 3), especially in comparison to an ingroup offender (Study 3), it increased positive evaluations of participants' ingroups, especially when ingroups were not the most favored ones to begin with (Study 4), and it increased the appreciation of an ingroup symbol, mediated by people's need to engage in meaningful behavior (Study 5). Several measures ruled out that these results could be explained by other affective states. These novel findings are discussed with respect to boredom, social identity, and existential psychology research.

## Keywords

boredom, social identity, meaning, self-regulation, existential psychology

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Boredom is a state which everyone has probably experienced at one time or another, be it while waiting in a traffic jam, while completing tax forms, or while entering a vast amount of data. Notwithstanding how common boredom appears to be, this experience has only recently been subjected to systematic psychological enquiry. As a result, very little is known about how this ordinary experience affects people's thoughts, behaviors, and social environment. In the current article, we sought to fill this void by investigating how boredom relates to one particularly important social psychological variable: social identity. Specifically, we hypothesized that people more positively evaluate representations of their ingroups, relative to those of their outgroups, when they experience boredom. To understand why boredom triggers these processes, it is central to first consider the cognitions and motivations involved in the experience of boredom.

## Boredom

In recent years, a number of researchers have suggested definitions and descriptions of boredom. Notable definitions have, for example, been offered by Mikulas and Vodanovich (1993), who stated that boredom involves "a state of relatively low arousal and dissatisfaction which is attributed to an inadequately stimulating environment" (p. 3), and Barbalet (1999), who suggested that boredom "is a restless, irritable feeling that the subject's current activity or situation holds

no appeal, and that there is a need to get on with something interesting" (p. 631) and that "boredom is anxiety about the absence of meaning in a person's activities or circumstances" (p. 641; also see Fromm, 1973). Consistently, empirical studies have pointed out that boredom typically involves, or is triggered by, a lack of stimulation, variation, challenge, arousal, or meaning (e.g., Csikszentmihalyi, 1990, 2000; Fahlman, Marcer, Gaskocski, Eastwood, & Eastwood, 2009; Hill & Perkins, 1985; Mikulas & Vodanovich, 1993). Most of the boredom research to date has focused on how differences in individual tendencies to become bored relate to other individual tendencies and dispositions (e.g., boredom proneness; Farmer & Sundberg, 1986; Vodanovich, 2003). This research generally portrays the tendency to become bored as a source of aversive factors, ranging from depression, loneliness, and anxiety to reduced work enjoyment, hostility, and anger, and many more unpleasant correlates (e.g., Buss & Perry, 1992; Farmer & Sundberg, 1986; Kass, Vodanovich, & Callander, 2001; Vodanovich, Verner, & Gilbride, 1991).

<sup>1</sup>University of Limerick, Castletroy, Ireland

## Corresponding Author:

Wijnand A. P. van Tilburg, University of Limerick, Department of Psychology, Room CS2-023, Castletroy, Ireland  
Email: Wijnand.vanTilburg@ul.ie

Besides research on individual differences in boredom tendencies, a handful of studies have addressed the affective and motivational character of boredom as a *state* experience. Interestingly, the results of these studies indicate that the momentary experience of boredom is a distinct emotional state, as it entails a relatively stable set of feelings, cognitions, thoughts, motivations, action tendencies, and expressions that sets it apart from other negatively valenced experiences. For example, bored people have little on their mind, have a good sense of what is going on in the present situation, yet show little attention and effort toward their situation (C. A. Smith & Ellsworth, 1985). Moreover, boredom has a distinct bodily expression, with people leaning their heads backward, collapsing their bodies, and showing very little movement (Wallbott, 1998). Furthermore, people who are bored typically feel restless and want to do something interesting, meaningful, and challenging (Sansone, Weir, Harpster, & Morgan, 1992; J. L. Smith, Wagaman, & Handley, 2009; Van Tilburg & Igou, in press-a; also see Leary, Rogers, Canfield, & Coe, 1986), illuminating boredom's strong motivational character.

Interestingly, the experience of boredom has also an existential connotation: When people are bored, they consider their activity, situation, or life to be meaningless (Barbalet, 1999; Fromm, 1973; Van Tilburg & Igou, in press-a, 2011). The fundamental conception that life should be meaningful, should make sense, and should hold some kind of purpose (Greenberg, Koole, & Pyszczynski, 2004; Heine, Proulx, & Vohs, 2006) is thus challenged, as boredom provides an experiential cue that existence, at least in the moment, has been rendered meaningless. This process is described dramatically by Schopenhauer in his essay "On the Vanity of Existence":

Human life must be some kind of mistake. The truth of this will be sufficiently obvious if we only remember that man is a compound of needs and necessities hard to satisfy; and that even when they are satisfied, all he obtains is a state of painlessness, where nothing remains to him but abandonment to boredom. This is direct proof that existence has no real value in itself; for what is boredom but the feeling of the emptiness of life? (Schopenhauer, 1851/2009, p. 357)

What can bored people do? Remaining bored and lacking meaning in life make people at risk of pathological gambling (Blaszczynski, McConaghy, & Frankova, 1990), aggressive behavior (Rupp & Vodanovich, 1997; also see Fromm, 1972, 1973), eating disorders (Jervis, Spicer, & Manson, 2003; Stickney & Miltenberger, 1999), and depression, anxiety, and substance abuse (Debats et al., 1993; Harlow, Newcomb, & Bentler, 1986; Steger, Frazier, Oishi, & Kaler, 2006). Research indicates that boredom can trigger strong self-regulatory processes, for example aimed at making the boring situation itself more fun, challenging, or interesting

(Csikszentmihalyi, 1990, 2000; Sansone et al., 1992; J. L. Smith et al., 2009). Similarly, we argue that bored people are motivated to engage in strategies that are considered helpful for *reestablishing a sense of meaningfulness* (Barbalet, 1999; Van Tilburg & Igou, in press-a, 2011), and we argue that social identity serves as a vehicle for perceived meaningfulness in response to boredom.

### Identity and Meaning

As described by social identity theory (Tajfel, 1978; Tajfel & Turner, 1979) and social categorization theory (Turner, Hogg, Oakes, Reicher, & Wheterel, 1987), a fundamental part of who people think they are (and who they are not) is based on the groups to which they belong (also see Reicher, Spears, & Postmes, 1995; Spears et al., 2004). Being social psychologists, being home owners, and being vegetarians inform people of what kind of people they are, in what behaviors they may engage, and how they interact with their social environment. Obviously, some groups are more relevant to the self-concept than others, and these relevant groups can constitute social identity (Tajfel, 1972; also see Hogg & Terry, 2000). More generally, what groups constitute social identity is not merely based on the groups to which people know they belong but rather requires that the group membership is emotionally valued (Tajfel, 1972, p. 292).

Social identities can provide a source of meaning for several reasons. Subscribing to a certain social group—or not subscribing to one—provides valuable information about a person: Social identity "helps [people] to define and to do" (Spears et al., 2004, p. 298). When a man from Ireland categorizes himself as an Irishman, he subsequently knows how to feel (e.g., proud of unique Irish traditions), how to behave (e.g., admiring the beauty of the Emerald island), and what to value (e.g., being an enthusiastic rugby fan). Existential psychological approaches stress that social identities can provide people with buffers against meaning threats (Castano, Yzerbyt, & Paladino, 2004; Castano, Yzerbyt, Paladino, & Sacchi, 2002; Pyszczynski, Greenberg, & Solomon, 1997). Moreover, belonging to (relevant) social groups boosts feelings of socially connectedness (Baumeister & Leary, 1995; Wildschut, Sedikides, Arndt, & Routledge, 2006), increases a sense of control (Hogg, 2000), can have self-esteem benefits (Pyszczynski et al., 1997; also see Ellemers, Spears, & Doosje, 2002; Hogg & Abrams, 1990; Rubin & Hewstone, 1998), and makes people feel part of something that transcends the mortal individual (Castano et al., 2002; Castano et al., 2004)—four key sources of having a general sense of meaning in life (Heine et al., 2006). The beneficial existential function that social identities can serve has become evident especially in research on death reminders—a fundamental meaning threat—which lead to more positive evaluations of one's ingroup and more negative evaluations of outgroups (Castano et al., 2002; Castano et al., 2004; Greenberg, Pyszczynski, & Solomon, 1997; Harmon-Jones,

Greenberg, Solomon, & Simon, 1996). In sum, social identification holds the potential to serve as a strategy aimed at (re)attaining or defending meaningfulness.

### *Ingroup Valuation and Outgroup Devaluation Because of Boredom*

Boredom presents a threat to meaningfulness, whereas social identification can help people to deal with meaning threats. In addition, literature suggests that boredom promotes attempts to restore a sense of meaningfulness (e.g., Barbalet, 1999; Van Tilburg & Igou, in press-a, 2011). How might social identification serve as a strategy in meaning regulation when people are bored? Research in the domain of mortality salience suggests that existential threats affect the *evaluation* of groups. For example, Castano and colleagues (2002) found that Italian participants primed with death evaluated the ingroup "Italians" more positively compared to participants in a control condition, which resulted from increased social identification with being Italian. Similarly, Greenberg and colleagues (1990) observed in earlier research that Christian participants primed with death regarded a target from their ingroup (Christians) more positively and were more negative toward a target that belonged to an outgroup (Jews). Such a pattern of ingroup favoritism and outgroup derogation as a result of meaning threats is consistent with findings by Harmon-Jones and colleagues (1996), who observed that mortality reminders increased intergroup biases. According to terror management theory (Greenberg et al., 2004; Greenberg, Pyszczynski, & Solomon, 1986, 1997), the enhanced evaluation of an ingroup under existential threat reflects people's attempts to more strongly embrace the worldview that is associated with the ingroup because it imbues the world with meaning (Castano et al., 2004; Heine et al., 2006). The derogation of outgroups, on the other hand, reflects people's defense of their worldview against potential challenges such as those posed by opposing beliefs that are held by the outgroup members (Greenberg et al., 2004). In other words, people's positive evaluations of their ingroups and negative evaluations of outgroups become more pronounced in the face of meaning threats.

Based on the observation that enhanced valuation of an ingroup and devaluation of an outgroup can serve a meaning-regulation purpose, we hypothesized that boredom as meaning threat increases evaluations regarding ingroups relative to evaluations of threatening outgroup. We examined this hypothesis in a series of five studies, with each study employing a unique boredom manipulation. First, we tested whether boredom increased preferences for the Irish name Eoin relative to Owen (Study 1). Next, we tested whether boredom increased punishment of an outgroup aggressor in a hypothetical intergroup conflict scenario (Study 2) and then tested whether boredom made people more lenient in their punishments of an ingroup aggressor

relative to an outgroup aggressor (Study 3). We then examined whether boredom increased the positive evaluation of groups that are associated with the self, independently of several other specific emotional states and affect in general (Study 4). Finally, we examined whether boredom increased the evaluation of an Irish ingroup symbol but not neutral symbols and investigated the motivation to engage in meaningful behavior as critical mediator (Study 5).

To the authors' best of knowledge, the current empirical investigation of the link between boredom and social identity processes is the first in its kind and hence provides a novel perspective on how such a mundane experience as boredom is related to intergroup attitudes. Establishing an empirical link between boredom and social identity would greatly contribute to the understanding of the dynamic nature of social identity processes.

## **Study 1: Boredom Increases Preferences for an Ingroup Name**

Meaning threats such as mortality salience increase positive ingroup evaluations (Castano et al., 2004; Greenberg et al., 1997; Harmon-Jones et al., 1996). Therefore, we tested whether boredom would similarly increase positive ingroup evaluations, assessed through participants' preference for the Irish first name Eoin relative to its international and common (non-Irish) equivalent Owen, the pronunciations of which are identical. We hypothesized that participants who first engaged in a boring task would favor Eoin over Owen to a greater extent than participants who did not engage in the boring task.

### *Method*

**Participants and design.** A total of 39 Irish students (23 women, 16 men;  $M_{\text{age}} = 23.26$ ,  $SD = 6.41$ ) participated in this study and were randomly assigned to the high boredom or low boredom condition of a between-subjects design.<sup>1</sup>

**Procedure and materials.** We induced boredom either by having participants engage in the boring task of counting the number of letters in sentences (high boredom condition; see the appendix) or by not having them do this (low boredom condition). Participants next rated the extent to which they most liked the name Eoin versus Owen on a 7-point scale ranging from 1 (*definitely Eoin*) to 7 (*definitely Owen*). Hence, lower ratings were indicative of favoring Eoin over Owen. Collection of demographic information and debriefing concluded the experimental session.

**Pilot study: Manipulated boredom experience.** We conducted a within-subjects pilot study among 41 undergraduate students in which we asked them to rate their experience of boredom before and after the letter count task (1 = *not at all*, 7 = *very much*); we also included a condition in which participants did not complete the boring task to ensure that boredom did not arise from answering the same question twice.

A repeated measures ANOVA with the two boredom questions as dependent variables and the presence of the boring task as independent variable revealed a significant main effect of the boredom question,  $F(1, 39) = 8.74, p < .01, \eta^2 = .18$ , no significant main effect of the presence of the boredom task ( $F < 1$ ), and the critical significant interaction,  $F(1, 39) = 4.73, p = .04, \eta^2 = .11$ . Specifically, participants who engaged in the boring task felt more bored after the task ( $M = 4.05, SD = 1.75$ ) compared to before the task ( $M = 3.16, SD = 1.74$ ),  $t(18) = 2.77, p = .01, d = 1.31$ . Moreover, no significant differences were observed between the first ratings ( $M = 3.05, SD = 1.59$ ) and the second ratings for those who did not complete the boring task ( $M = 3.18, SD = 1.79, t < 1$ ). These results show that the task induced boredom.

### Results and Discussion

We entered participants' preference ratings for Eoin or Owen as dependent variable in a one-way ANOVA, with the boredom condition as independent variable. Participants in the high boredom condition favored the name Eoin over Owen to a greater extent ( $M = 1.75, SD = 1.21$ ) than participants in the low boredom condition ( $M = 2.89, SD = 1.85$ ),  $F(1, 37) = 5.28, p = .03, \eta^2 = .13$ . Boredom thus led to a greater preference for the Irish name Eoin relative to the international more common equivalent Owen. Importantly, this finding is consistent with the notion that boredom promotes the positive evaluation of ingroup features.

### Study 2: Boredom Increases Outgroup Offender Jail Sentences

The previous study suggests that boredom makes people evaluate ingroup representations such as a name more positively. Study 2 was designed to extend this finding in several ways. As mentioned in the introduction, meaning threats such as mortality salience increase the evaluation of an ingroup, but they can also result in a less positive evaluation of outgroups (Castano et al., 2004; Greenberg et al., 1997; Harmon-Jones et al., 1996). In the current study we therefore asked participants to evaluate an aggressing outgroup member in a hypothetical intergroup conflict setting. Specifically, we provided participants with a scenario describing that an outgroup member (Englishman) beat up an ingroup member (Irishman). Participants were then asked to indicate the appropriate duration of the prison sentence that the English offender should have to serve. This measure was inspired by a study of Bodenhausen, Kramer, and Süsser (1994), in which guilt ratings were used as a proxy of participants' attitudes toward various ethnic groups. We reasoned that highly bored participants compared to less bored participants would give longer punishments to an outgroup offender.

### Method

**Participants and design.** In exchange for a beverage and a candy bar, 47 Irish students (28 women, 19 men;  $M_{age} = 19.23, SD = 1.80$ ) participated and were randomly assigned to either the high boredom or low boredom condition of a between-subjects design.

**Procedure and materials.** Participants were seated behind a computer that randomly flashed series of from 5 to 15 squares for 1.5 seconds. Each series of squares was horizontally presented in the center of the computer screen on a white background; the surface of each square approximated  $0.25 \text{ cm}^2$ , and there was 2 mm of distance between each individual square (see the appendix). After a series of squares was flashed on the screen, participants estimated the number of squares they had just seen. Participants in the low boredom condition completed 50 trials, whereas those in the high boredom condition completed 100 trials. Next, participants indicated the extent to which they felt bored and experienced a sense of meaninglessness (1 = *not at all*, 7 = *very much*). We next presented participants with a fictitious scenario about a recent crime:

On June 5, 2007, a 26 year old Englishman was arrested after bystanders had alarmed the police. Bystanders had overpowered the man while he was beating his victim during daylight. The victim—a 30 years old Irishman—was immediately taken to the hospital in critical condition. The victim was allowed to leave the hospital in acceptable physical shape after nine days of intense treatment. Later, the arrested man indicated that he was acting on anti-Irish motives and he had randomly selected the 30 year old man as a victim in a rage of fury.

After reading the scenario, participants imagined that they were a judge in a trial in which they had to determine the jail sentence for the offender. Subsequently, they indicated the appropriate duration of the offender's imprisonment in months. Collection of demographic information and debriefing concluded the experimental session.

### Results

**Boredom and meaninglessness.** We entered boredom scores as dependent variable in a one-way ANOVA, with the boredom manipulation as independent variable. This analysis indicated that participants in the high boredom condition were more bored ( $M = 5.60, SD = 1.35$ ) compared to those in the low boredom condition ( $M = 4.37, SD = 1.84$ ),  $F(1, 45) = 6.35, p = .02, \eta^2 = .12$ . Similarly, a one-way ANOVA with the boredom manipulation as independent variable and the meaninglessness scores as dependent variable indicated that participants in the high boredom condition experienced

meaninglessness to a greater extent ( $M = 4.95$ ,  $SD = 1.67$ ) compared to those in the low boredom condition ( $M = 3.78$ ,  $SD = 1.76$ ),  $F(1, 45) = 5.32$ ,  $p = .03$ ,  $\eta^2 = .11$ .<sup>2</sup>

**Jail sentences.** Inspection of the average duration of the jail sentences suggested that participants in the high boredom condition allocated substantially more months of prison ( $M = 70.80$ ,  $SD = 112.53$ ) compared to participants in the low boredom condition ( $M = 29.07$ ,  $SD = 21.68$ ). To analyze the statistical reliability of this difference we employed a square-root transformation on the jail sentences to obtain more normally distributed scores (Tabachnick & Fidell, 2000). We then entered this measure as dependent variable in a one-way ANOVA with the boredom manipulation as independent variable. As hypothesized, participants in the high boredom condition gave longer jail sentences to the outgroup offender ( $M = 7.21$ ,  $SD = 4.45$ ) compared to those in the low boredom condition ( $M = 5.08$ ,  $SD = 1.83$ ),  $F(1, 45) = 5.06$ ,  $p = .03$ ,  $\eta^2 = .10$ .<sup>3</sup>

## Discussion

The current findings show that boredom increases hypothetical jail sentences administered to an outgroup offender in an intergroup conflict setting. Importantly, the boredom manipulation increased a sense of meaninglessness. These results are consistent with our hypothesis that bored people seek meaningfulness by negatively evaluating the actions of an outgroup member that are targeted against an ingroup member.

## Study 3: Boredom and Jail Sentences for Ingroup and Outgroup Members

The previous studies suggest that boredom made participants evaluate an ingroup name more positively and made participants give longer jail sentences to an outgroup offender. In Study 3, we examined the evaluation of *both* an ingroup member and an outgroup member. Similar to Study 2, participants evaluated an aggressing person in an intergroup conflict setting, but we provided participants either with a scenario describing that an outgroup member (Englishman) beat up an ingroup member (Irishman) as in Study 2 or with a scenario describing that an ingroup member (Irishman) beat up an outgroup member (Englishman). This was again followed by an assessment of jail sentences. Importantly, if the effect of boredom on jail sentences results from the meaningfulness that social identities offer, then the length of the jail sentence should be qualified by the group to which the offender belongs. We hypothesized that, under high boredom, participants would give longer sentences to an outgroup offender compared to an ingroup offender.

## Method

**Participants and design.** In exchange for a beverage at a local cafe, 90 Irish people in the center of a large city (45 men, 45 women,  $M_{\text{age}} = 24.70$ ,  $SD = 11.34$ ) participated and were randomly assigned to one of the conditions of a 2 (boredom: high vs. low)  $\times$  2 (offender: Irish vs. English) between-subjects factorial design.

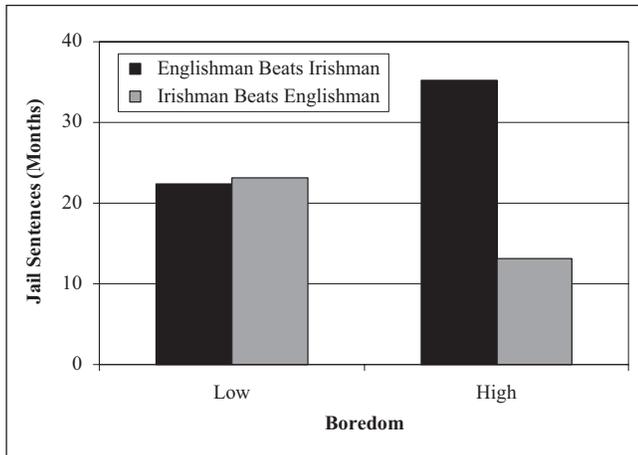
**Procedure and materials.** We manipulated boredom by asking participants to draw lines through either three large spirals (low boredom condition) or nine large spirals (high boredom condition; see the appendix). Next, we asked participants to indicate, on separate scales, the extent to which they felt bored and meaningless (1 = *not at all*, 7 = *very much*). We then presented participants with the same fictitious scenario as in Study 2, but we changed the roles of the Englishman and Irishman for those in the Irish offender condition. After reading the scenario, participants imagined that they were a judge in a trial in which they had to determine the appropriate duration of the jail sentence for the offender in months. Collection of demographic information and debriefing concluded the experimental session.

## Results

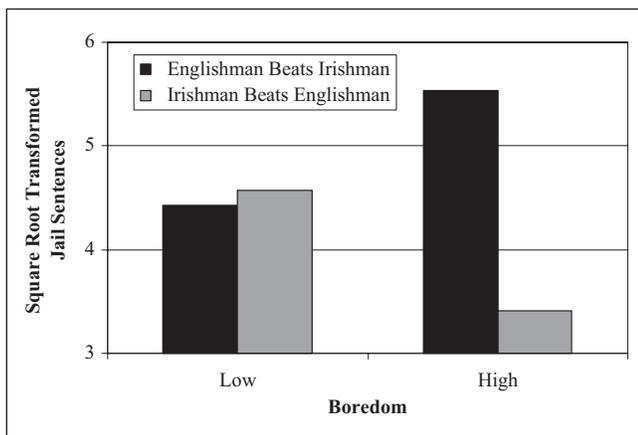
**Boredom and meaninglessness.** A one-way ANOVA, with the boredom manipulation as independent variable and the experienced boredom as dependent variable, confirmed that participants were more bored in the high boredom condition ( $M = 4.25$ ,  $SD = 2.08$ ) compared to participants in the low boredom condition ( $M = 3.31$ ,  $SD = 1.54$ ),  $F(1, 87) = 5.89$ ,  $p = .02$ ,  $\eta^2 = .06$ . Similarly, a one-way ANOVA, with the boredom manipulation as independent variable and meaninglessness ratings as dependent variable, confirmed that the high boredom condition yielded higher meaninglessness ratings ( $M = 4.50$ ,  $SD = 2.34$ ) compared to the low boredom condition ( $M = 3.27$ ,  $SD = 1.85$ ),  $F(1, 85) = 7.48$ ,  $p < .01$ ,  $\eta^2 = .08$ .<sup>4</sup>

**Jail sentences.** As displayed in Figure 1a, inspection of the average duration of the jail sentences suggested that, when determining appropriate prison sentences for the Englishman, participants in the high boredom condition allocated a substantially higher number of months in prison ( $M = 35.25$ ,  $SD = 27.40$ ) compared to participants in the low boredom condition ( $M = 22.41$ ,  $SD = 14.75$ ). Sentences for the Irishman, on the other hand, seemed considerably shorter in the high boredom condition ( $M = 13.14$ ,  $SD = 7.46$ ) compared to the low boredom condition ( $M = 23.17$ ,  $SD = 19.60$ ). To analyze the statistical reliability of this interaction pattern, we employed a square-root transformation on the jail sentences to obtain more normally distributed scores (Tabachnick & Fidell, 2000), as in Study 2.

We then entered the transformed sentences as dependent variable in a two-way ANOVA, with the boredom manipulation and the nationality of the offender as independent



**Figure 1a.** Allocated jail sentences as a function of boredom and offender nationality (Study 3)



**Figure 1b.** Allocated square-root transformed jail sentences as a function of boredom and offender nationality (Study 3)

variables. As shown in Figure 1b, this analysis indicated no main effect of boredom ( $F < 1$ ), a significant main effect of the nationality of the offender,  $F(1, 86) = 6.90, p = .01, \eta^2 = .07$ , and the crucial interaction effect,  $F(1, 86) = 9.07, p < .01, \eta^2 = .10$ . In the low boredom condition, there were no significant differences in the sentencing of an English or Irish offender ( $M = 4.43, SD = 1.71$  vs.  $M = 4.57, SD = 1.77$ , respectively,  $t < 1$ ). In the high boredom condition, however, the English offender was sentenced to jail for a significantly longer period of time ( $M = 5.53, SD = 2.20$ ) compared to the Irish offender ( $M = 3.41, SD = 1.26$ ),  $t(86) = 3.98, p < .001, d = 0.86$ . In addition, jail sentences given to the Englishman were significantly higher in the high boredom condition compared to the low boredom condition,  $t(86) = 2.10, p = .04, d = 0.45$ , whereas the jail sentences for the Irishman were significantly shorter when participants were highly versus somewhat bored,  $t(86) = 2.16, p = .04, d = 0.47$ .

## Discussion

We examined whether boredom reduces jail sentences given to an ingroup member who assaulted an outgroup member, relative to an outgroup member who assaulted an ingroup member. As hypothesized, participants gave shorter jail sentences to Irish offenders compared to English offenders, but only if the participants first engaged in a highly boring task. In addition, the highly boring task was associated with elevated boredom and meaninglessness. Again, these results are consistent with our framework that bored people, that is, people whose situation seems meaningless, evaluate ingroups and outgroup in a way that seems meaningful.

Importantly, the current study employed a manipulation of boredom that was different from the one used in Study 2, yet we found a similar pattern of results for outgroup evaluations. These similar effects when adopting different boredom inductions suggest that the results are independent of the specific procedure that was used. Rather, the observed effect reflects a general effect of boredom.

## Study 4: Boredom and the Evaluation of Meaningful Social Identities

In Study 4 we investigated a boundary condition for boredom effects on social identity. If group memberships are sources of personal meaningfulness (Castano et al., 2002; Castano et al., 2004; Pyszczynski et al., 1997), would a meaning threat, such as experiencing boredom, widen the inclusion of groups as sources of meaning? Imagine that an Irishman is and always has been incredibly proud about being Irish. In that case, he would evaluate representations of his national identity highly positively, regardless of whether he is bored. Stated otherwise, when the adherence to a specific social identity is already profound, then it becomes unlikely that any contextual effect—including boredom—will further increase the positivity of its evaluation, which resembles a “ceiling effect” in statistical terms. However, when an Irishman’s attachment to being Irish is rather weak, there still exists the possibility of increasing this identification.

In essence, we propose that the use of social identities for meaning regulation is larger for social identities that are relatively moderate than for those that are strong to begin with. The greatest increase in adherence to or evaluation of a particular social identity will occur when the social identity is moderately, but not extremely, important to begin with. What implications does that have for the effects of boredom on the evaluation of ingroups? We posit that the increase in the evaluation of an ingroup as a result of boredom will become greater the more the ingroup evaluations can actually

increase and that this will occur for groups that are associated with the self but are rather peripheral to the self to begin with. That is, boredom as specific meaning threat widens social identities so that peripheral groups to the self can serve as vehicles of meaningfulness similar to the functions of the group that is generally central to the self.

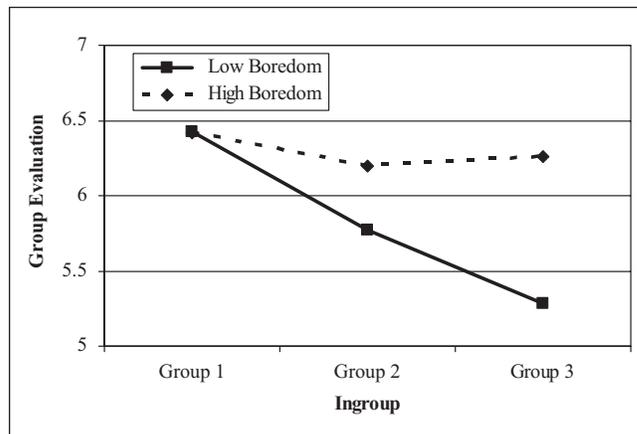
In Study 4, we tested whether the evaluation of participants' social identities *especially* increased because of boredom when these identities were not already highly positively evaluated. For that purpose, we asked participants to rank order groups that were most important to them. A pilot study confirmed that such rankings reflected the degree to which participants identified with the groups.<sup>5</sup> We hypothesized that the effect of boredom on ingroup evaluations would be greatest for the third group, followed by the second group, and smallest for the first group. In terms of statistics, this translates into an interaction between the successive group and the boredom manipulation (i.e., between the group trend and boredom). Participants not very bored would evaluate the first ingroup most positively, followed by the second group, and then by the third group, whereas highly bored participants would simply evaluate all three ingroups very positively.

## Method

**Participants and design.** A total of 53 Irish undergraduate students (29 women, 24 men;  $M_{\text{age}} = 20.19$ ,  $SD = 2.32$ ) participated in this study and were randomly assigned to the high boredom or low boredom condition of a between-subjects design.

**Procedure and materials.** Participants listed three groups to which they belonged and that they considered to be an important part of who they were. Participants were then presented with a task to manipulate boredom: a series of squares that each contained three small circles, labeled A, B, and C. Participants were instructed to draw lines from Circle A to Circle B and then from Circle B to Circle C (see the appendix). Participants in the low boredom condition were requested to complete 3 such squares, whereas participants in the high boredom condition were requested to complete 15 squares. Next, participants relisted the three groups that they had previously generated, then evaluated each of the groups by indicating their importance (1 = *not at all* to 7 = *very much*) and indicated how positive or negative they considered this group (-3 = *very negative*, 3 = *very positive*). Collection of demographic information and debriefing concluded the experimental session.

**Pilot study: Boredom and meaningfulness versus other affective states.** We conducted a pilot study to test whether the new manipulation effectively induced different boredom levels and did not also affect experienced sadness, anger, frustration, negativity, and positivity. The pilot study ( $N = 35$  undergraduate students) contained the boredom manipulation followed by items that assessed the extent to which participants felt bored, sad, negative, less positive, angry, frustrated,



**Figure 2.** Evaluations of self-generated ingroups as a function of boredom (Study 4)

and meaningless (1 = *not at all*, 7 = *very much*). Participants felt more bored in the high boredom condition ( $M = 4.44$ ,  $SD = 1.92$ ) compared to participants in the low boredom condition ( $M = 3.23$ ,  $SD = 1.30$ ),  $F(1, 33) = 4.71$ ,  $p = .04$ ,  $\eta^2 = .13$ . Similarly, meaningfulness ratings were significantly higher in the high boredom condition ( $M = 5.39$ ,  $SD = 1.34$ ) compared to the low boredom condition ( $M = 3.88$ ,  $SD = 1.93$ ),  $F(1, 33) = 7.27$ ,  $p = .01$ ,  $\eta^2 = .18$ . Importantly, our manipulation did *not* significantly affect sadness, feeling negative, feeling less positive, feeling frustrated, or feeling angry (all  $F$ s < 1). The effects of our manipulation can thus specifically be attributed to boredom and meaningfulness and not to other affective states.

## Results and Discussion

Before averaging participants' ratings of each pair of evaluative items (all  $r$ s > .51, all  $p$ s < .001), we first added the value of 4 to the second items to make the scale ranges similar. We entered the averages as three dependent variables in a mixed ANOVA, with the boredom manipulation as independent variable and the sequence number of the listed groups as a within-subjects factor (i.e., Group 1 vs. Group 2 vs. Group 3).

As shown in Figure 2, this analysis revealed significant differences across the evaluations of the three groups,  $F(2, 102) = 8.12$ ,  $p < .001$ ,  $\eta^2 = 0.14$ , a significant main effect of the boredom manipulation,  $F(1, 51) = 7.68$ ,  $p < .01$ ,  $\eta^2 = .13$ , and a significant qualifying interaction effect,  $F(2, 102) = 4.47$ ,  $p = .01$ ,  $\eta^2 = 0.08$ . Specifically, a linear trend emerged for the evaluated groups,  $F(1, 51) = 17.25$ ,  $p < .001$ ,  $\eta^2 = .25$ , indicating that the evaluations of the groups decreased successively ( $M_{\text{Group1}} = 6.42$ ,  $SD_{\text{Group1}} = 0.69$ ;  $M_{\text{Group2}} = 5.98$ ,  $SD_{\text{Group2}} = 0.99$ ;  $M_{\text{Group3}} = 5.75$ ,  $SD_{\text{Group3}} = 1.15$ ; respectively).

Importantly, the linear boredom  $\times$  group trend interaction was significant,  $F(1, 51) = 9.82$ ,  $p < .01$ ,  $\eta^2 = .16$ . The linear trend of the evaluated group differed across the two boredom conditions: In the low boredom condition, the linear trend

of the evaluated group was significant,  $F(1, 27) = 29.59$ ,  $p < .001$ ,  $\eta^2 = .52$ , indicating that the evaluations of the groups decreased successively ( $M_{\text{Group1}} = 6.43$ ,  $SD_{\text{Group1}} = 0.65$ ;  $M_{\text{Group2}} = 5.77$ ,  $SD_{\text{Group2}} = 1.17$ ;  $M_{\text{Group3}} = 5.29$ ,  $SD_{\text{Group3}} = 1.18$ ; respectively). In the high boredom condition, however, no significant linear group trend emerged ( $F = 1$ ), implying the absence of successive decrease ( $M_{\text{Group1}} = 6.42$ ,  $SD_{\text{Group1}} = 0.75$ ;  $M_{\text{Group2}} = 6.20$ ,  $SD_{\text{Group2}} = 0.69$ ;  $M_{\text{Group3}} = 6.26$ ,  $SD_{\text{Group3}} = 0.89$ ; respectively). Closer inspection of the averages revealed that, for the participants in the low boredom condition, the first group was evaluated more positively compared to the second group,  $t(27) = 3.07$ ,  $p < .01$ ,  $d = 1.18$ , and compared to the evaluations of the third group,  $t(27) = 5.44$ ,  $p < .001$ ,  $d = 2.09$ , with no significant difference between the second and third groups,  $t(27) = 1.51$ ,  $p = .14$ ,  $d = 0.58$ . Importantly, participants in the high boredom condition no longer evaluated the second and third groups as significantly different from the first group (all  $ps > .17$ ).

In sum, participants who were somewhat bored made distinctively different evaluations of the groups to which they belonged, with the second and third groups being significantly less positively evaluated than the first group. However, this pattern of results was different for highly bored participants who simply evaluated *all* their self-generated groups highly positively. This observation is consistent with the notion that boredom motivates people to strongly embrace their ingroups. This conclusion is further supported by the results of our pilot study, which indicated that the boredom manipulation increased boredom and meaninglessness but did not influence the specific affective states of sadness, anger, and frustration or general negativity and positivity. The current study thus confirmed that specifically boredom increases the evaluation of relevant ingroups, especially when the groups have high meaning-regulation potential.

## Study 5

Thus far, the results have indicated that boredom involves a lack of meaningfulness and that boredom subsequently affects several social identity related consequences. Consistent with past literature on social identity and meaning (e.g., Castano et al., 2004; Greenberg et al., 1997; Harmon-Jones et al., 1996), we suggest that these latter effects stem from bored people's attempt to reestablish a sense of meaningfulness. That is, people's *motivation* to do something meaningful should underlie the link between boredom and social identity. Indeed, a meaning-regulation motivation has been identified as a process that explains other forms of meaningful behavior triggered by boredom, such as prosocial behavior (Van Tilburg & Igou, 2011). In Study 5, we examined this crucial mediating role of the motivation to engage in meaningful behavior in relation to social identity. It was predicted that boredom increases the evaluation of a symbol related to participants' national identity (i.e., a shamrock) but not the evaluation of symbols that are unrelated to their national identity. Importantly, it was

expected that the motivation to engage in meaningful behavior would mediate this effect of boredom on the national symbol evaluation.

## Method

**Participants and design.** A total of 60 Irish undergraduate students (45 women, 15 men;  $M_{\text{age}} = 20.27$ ,  $SD = 3.22$ ) participated in this study and were randomly assigned to the high boredom or low boredom condition of a between-subjects design.

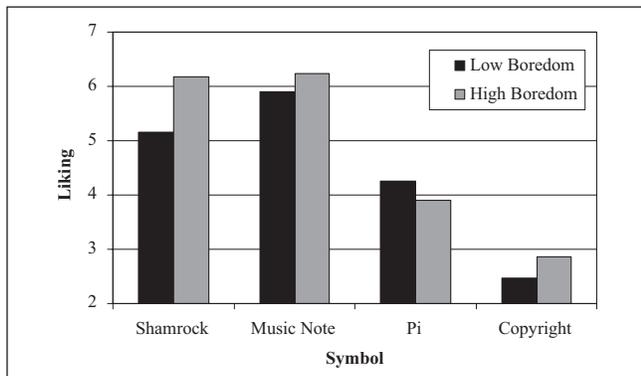
**Procedure and materials.** We induced boredom by having participants engage in the boring task of copying either five references (high boredom condition; see the appendix) or only one reference (low boredom condition). Participants next rated the extent to which they felt bored and meaningless and to what extent they wanted to do something meaningful, all on scales from 1 (*not at all*) to 7 (*very much*). Next, we used a measure for perceived meaningfulness with regard to social identity (also see Van Tilburg & Igou, in press-b). Participants indicated the extent to which they liked four symbols on scales from 1 (*not at all*) to 7 (*very much*). The first two of these symbols were relatively neutral (music note, pi), followed by the symbol that was related to the national ingroup (shamrock), and the fourth symbol was again relatively neutral (copyright). Collection of demographic information and debriefing concluded the experimental session.

## Results and Discussion

**Boredom and meaninglessness.** The item measuring boredom was entered as dependent variable into a one-way ANOVA with the boredom condition as independent variable. The experienced level of boredom was indeed higher in the high boredom condition ( $M = 5.69$ ,  $SD = 1.31$ ) compared to the low boredom condition ( $M = 3.93$ ,  $SD = 1.91$ ),  $F(1, 57) = 16.83$ ,  $p < .001$ ,  $\eta^2 = .23$ . Participants in the high boredom condition also felt more meaningless ( $M = 4.93$ ,  $SD = 1.83$ ) compared to those in the low boredom condition ( $M = 3.40$ ,  $SD = 1.69$ ),  $F(1, 57) = 11.13$ ,  $p < .01$ ,  $\eta^2 = .16$ .<sup>6</sup>

**The motivation to engage in meaningful behavior.** The item measuring participants' motivation to engage in meaningful behavior was entered as dependent variable into a one-way ANOVA with the boredom condition as independent variable. Importantly, the extent to which participants wanted to do something meaningful was greater in the high boredom condition ( $M = 6.34$ ,  $SD = 0.90$ ) than in the low boredom condition ( $M = 5.10$ ,  $SD = 1.32$ ),  $F(1, 57) = 17.78$ ,  $p < .001$ ,  $\eta^2 = .24$ .

**Symbol evaluations.** As reflected in Figure 3, a one-way ANOVA with the boredom manipulation as between-subjects variable and the evaluations of the ingroup symbol as dependent variable revealed that participants in the high boredom condition liked the Irish symbol to a greater extent ( $M = 6.17$ ,  $SD = 1.00$ ) compared to participants in the low boredom condition ( $M = 5.16$ ,  $SD = 1.72$ ),  $F(1, 58) = 7.64$ ,  $p < .01$ ,  $\eta^2 = .12$ .



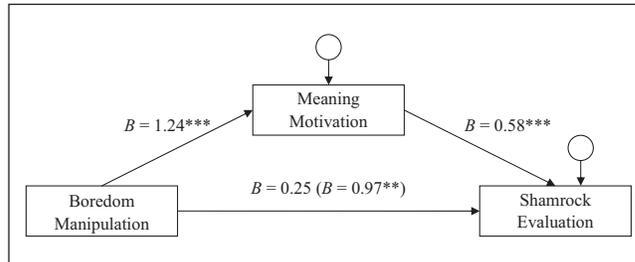
**Figure 3.** Irish participants' evaluations of a shamrock and neutral symbols as a function of boredom (Study 5)

In comparison to this predicted boredom effect, there was no significant effect of the boredom manipulation for the music note evaluations ( $M = 6.24, SD = 0.79$  vs.  $M = 5.90, SD = 1.08$ ),  $F(1, 58) = 1.91, p = .18, \eta^2 = .03$ . Similarly, the pi evaluations were unaffected by boredom ( $M = 3.90, SD = 1.80$  vs.  $M = 4.26, SD = 1.90$ ),  $F < 1$ , and the copyright evaluations ( $M = 2.86, SD = 1.40$  vs.  $M = 2.48, SD = 1.50$ ) were also not reliably affected by the boredom manipulation,  $F(1, 58) = 1.10, p = .30, \eta^2 = .02$ .

**Mediation by the motivation to engage in meaningful behavior.** We next tested whether the motivation to engage in meaningful behavior could explain the effect of boredom on the evaluation of the ingroup symbol. This was examined using the mediation analysis procedure proposed by Preacher and Hayes (2008). In this mediation model, the dummy coded boredom manipulation (0 = low boredom, 1 = high boredom) was entered as independent variable, the evaluation of the national symbol was entered as dependent variable, and the motivation to engage in meaningful behavior was entered as mediator. As reflected in Figure 4, this analysis identified that participants' motivation to do something meaningful reliably predicted more positive evaluations of the ingroup symbol,  $B = 0.58, SE = 0.15, p < .001$ . In addition, the original significant effect of the boredom condition on the evaluation of the ingroup symbol,  $B = 0.97, SE = 0.37, p = .01$ , was no longer reliable when controlling for participants' motivation to do something meaningful,  $B = 0.25, SE = 0.38, p = .52$ . Importantly, 5,000 accelerated and bias-corrected bootstraps (Hayes, 2009) confirmed the existence of a significant mediated effect,  $0.31 < B_{.95} < 1.19$ . Taken together, these results indicate that people's motivation to engage in meaningful behavior mediates the link between boredom and social identification.<sup>8</sup>

**General Discussion**

Threats to people's perceptions of meaningfulness increase adherence to and evaluation of social identities (Castano et al., 2004; Greenberg et al., 1997; Harmon-Jones et al., 1996). We proposed boredom as a novel meaning threat and



**Figure 4.** Ingroup symbol evaluations as a function of the motivation to do something meaningful and induced boredom (Study 5)

The mediation model on induced boredom, the motivation to do something meaningful, and the evaluation of an ingroup symbol (Irish shamrock), as analyzed in Study 5. The boredom manipulation was dummy coded (0 = low, 1 = high). Estimates were obtained using the mediation procedure suggested by Preacher and Hayes (2008), employing an accelerated and bias-corrected bootstrap estimation method for the indirect effect, with 5,000 bootstraps (Hayes, 2009). Indirect effect of the boredom manipulation on shamrock evaluation:  $0.31 < B_{.95} < 1.19$ .  $**p < .01$ .  $***p < .001$ .

subsequently tested the hypothesis that boredom renders people more favorable toward their ingroups and less favorable toward outgroups. We first tested this hypothesis by having Irish participants indicate their preference for the Irish name Eoin over its international more common equivalent Owen. Participants who had first engaged in the boring task of counting letters in sentences favored Eoin over Owen to a greater extent than Irish participants who did not engage in the boring task. We next tested, in Study 2, whether boredom would lead to devaluations of a threatening outgroup. Participants who engaged in a repetitive task of 100 compared to 50 square estimation trials felt more bored and meaningless, and they subsequently administered harsher punishments to a hypothetical outgroup offender. This finding was extended in Study 3, which revealed that participants gave harsher sentences to an outgroup offender compared to an ingroup offender, but only if they engaged in the boring and meaningless task of drawing nine versus three large spirals.

We investigated in Study 4 whether participants' evaluations of ingroups increased as a function of boredom, especially for ingroups that were not already highly positively evaluated. Participants listed three ingroups, then engaged in the boring task of connecting circles, and next evaluated their prelisted groups. Participants who had to connect only a few circles made greater distinction in their ingroups evaluations compared to those who had to connect many more circles and simply evaluated all their ingroups as highly positive. Finally, in Study 5 we manipulated boredom by having participants copy references before evaluating various symbols. Participants who felt highly bored gave more positive evaluations of a symbol associated with their national ingroup, whereas symbols not related to the participants' social identities were unaffected. In addition, this effect of boredom on the ingroup symbol evaluation was fully mediated by the extent to which participants wanted to engage in meaningful behavior.

Across the five studies, we manipulated boredom using a variety of procedures (i.e., a letter counting task, a square estimation task, a spiral drawing task, a circle connect task, and a reference copying task). By employing a multi-method approach we consistently showed that boredom rendered people more positive toward their ingroups and more negative toward outgroups. Moreover, our manipulation checks and pilot studies suggest that the observed effects cannot be accounted for in terms of changes in sadness, anger, frustration, negativity, or positivity. Rather, the motivation to engage in meaningful behavior in particular—a central element of the experience of boredom (e.g., Barbalet, 1999; Van Tilburg & Igou, in press-a, 2011)—could be held accountable for the effects on social identity. In sum, the meaning impairing experience of boredom in particular increases ingroup evaluations, often at the expense of outgroup evaluations. This pattern is in line with the notion that social identification serves an existential function (Castano et al., 2004).

### Implications, Limitations, and Future Directions

To the best of our knowledge, this research is the first to empirically examine the link between state boredom and the evaluation of ingroups and outgroups. In addition, the effects of boredom identified in the current research were found *even after* the completion of specific boring activities. Why does boredom have an impact even when the boring activity itself has finished? To understand these boredom effects, we believe that it is crucial to acknowledge the “meaning-denying” character of boredom (Barbalet, 1999; Fromm, 1973). Existential psychology research reveals that maintaining a sense of meaning is of central importance to human functioning, and meaning threats subsequently promote a great variety of responses aimed at (re)attaining or defending meaningfulness (Greenberg et al., 2004; Heine et al., 2006). In this sense, the relatively mundane experience of boredom can have a strong and impactful effect on meaning regulation in everyday life that surpasses the specific reason for being bored. We wish to preclude the misunderstanding, however, that boredom can or should be reduced to merely a lack of meaning or the motivation to engage in meaningful behavior. The meaning-regulation process triggered by boredom is interesting, especially in relation to social identity, but boredom may also trigger other motivational processes distinct from meaning regulation (e.g., sensation seeking, increasing challenge; Csikszentmihalyi, 1990, 2000; Vodanovich, 2003).

An interesting future direction of research would be to investigate whether bored people are successful in reestablishing a sense of meaningfulness after their meaning-regulation attempts. Importantly, people’s use of social identity in the attempt to regulate meaningfulness may not necessarily always facilitate successful reestablishment of meaningfulness. Importantly, bored people’s *attempts* to

reestablish meaning (e.g., by social identification) may primarily reflect the *belief* that these attempts may foster meaningfulness (e.g., Van Tilburg & Igou, 2011) but that may not always mean that people *succeed* in reestablishing meaning. The difference between belief and actual success in meaning repair touches on the question how well people can predict their psychological states (e.g., Wilson & Gilbert, 2003). We assume that beliefs in meaning repair and actual meaning repair are correlated; however, it is likely that multiple variables moderate this relationship as when people predict their affective states (e.g., Igou, 2004, 2008; Wilson & Gilbert, 2003).

The notion that a seemingly common experience as boredom can lie at the root of intergroup attitudes has important implications for the understanding of phenomena such as stereotyping, discrimination, and intergroup conflict. As Erich Fromm (1972) once stated,

Man is a passionate being, in need of stimulation; he tolerates boredom and monotony badly, and if he cannot take a genuine interest in life, his boredom will force him to seek it in the perverted way of destruction and violence. (p. 9)

This notion is consistent with the finding in *dispositional* boredom research that a positive association exists between boredom proneness and aggression. For example, people who are often bored also score higher on measures of anger, aggression, and hostility (Dahlen, Martin, Ragan, & Kuhlman, 2004; Rupp & Vodanovich, 1997). Although the current investigation related to *state* boredom rather than dispositional boredom, we think that our findings provide a crucial step in developing an understanding of *how* aggression or hostility relate to boredom. Attitudes toward ingroups and outgroups held by bored people may polarize, creating a greater discrepancy between the groups. Importantly, state boredom may fuel hostile sentiments toward *outgroups*. Speculatively, the heightened hostile and aggressive tendencies observed among easily bored people may be particularly expressed toward those who deviate from the beliefs held by the ingroup. This specificity illustrates that whether or not a hostile response follows from boredom critically depends on *context*: Boredom may fuel hostility, but especially so if bored people encounter settings in which intergroup tensions are salient. In essence, this means that, by identifying the meaning-regulation process that affects ingroup and outgroup attitudes, we have gotten a step closer to fully understanding what kind of aggression is associated with boredom, which may help to prevent aversive consequences of boredom and reduce intergroup tensions.

### Conclusions

We proposed that the evaluation of groups related to their social identities can be an expression of a quest for meaning. The results of five studies show that boredom rendered

evaluations of ingroups more positive and evaluations of threatening outgroups more negative, a finding that could not be attributed to changes in other specific emotions or affect. Furthermore, the effects of boredom were mediated by the motivation to engage in meaningful behavior. Taken together, our novel research demonstrates a link between feeling bored and the adherence to social identities as a vehicle of perceived meaningfulness.

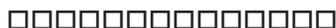
**Appendix**

**Boredom Manipulation Study 1:  
Letter Counting Task Example**

Please indicate for each of the below references how many letters they contain.

“Lancaster, Lynne (2005), Concrete Vaulted Construction in Imperial Rome. Innovations in Context, Cambridge University Press, 6068-4”

**Boredom Manipulation Study 2:  
Square Estimation Task Example**



Approximately how many squares did you just see?

**Boredom Manipulation Study 3:  
Drawing Spirals Task Example**

A series of spirals is presented below. We wish to ask you to please draw a line from the outer ring of the spiral towards its middle. Please do so for all the spirals that are presented.

**Boredom Manipulation Study 4:  
Circle Connect Task Example**

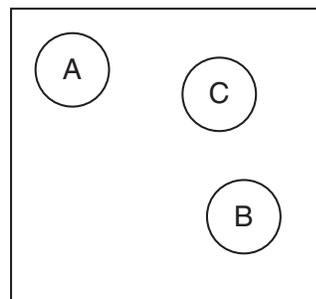
A series of boxes with circles is presented below. We wish to ask you to please draw a line between these circles from A to B to C.



**Boredom Manipulation Study 5:  
Reference Copying Task Example**

We wish to ask you to copy the five references presented on the bars underneath them. Please try to be accurate.

“Lancaster, Lynne (2005), Concrete Vaulted Construction



in Imperial Rome. Innovations in Context, Cambridge University Press, 6068-4”

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**Notes**

1. We excluded data from very few non-Irish participants (Studies 1–3 and 5), following inspection of reported nationality.
2. A mediation analysis (Preacher & Hayes, 2008) with the boredom manipulation as independent variable (0 = Low; 1 = High), meaningfulness as dependent variable, and experienced boredom as mediator suggested that participants’ experienced boredom predicted meaningfulness,  $B = 0.24, SE = 0.14, p = .09$ . The original effect of the boredom manipulation on meaningfulness was no longer reliable when controlling for participants’ level of boredom,  $B = 0.70, SE = 0.49, p = .17$ , and 5,000 accelerated and bias-corrected bootstraps (Hayes, 2009) confirmed the existence of a significant mediated effect,  $0.00 < B_{95} < 0.90$ .
3. Levene’s test for homogeneity of variances revealed a marginally significant difference in the groups’ variances,  $W(1, 45) = 3.51, p = .07$ . A corrected  $t$  test still indicated a significant effect,  $t(23.80) = 2.02, p = .05, d = 0.82$ .
4. A similar mediation analysis as in Note 2 (Study 2) confirmed that participants’ experienced boredom predicted meaningfulness,

- $B = 0.64$ ,  $SE = 0.10$ ,  $p < .001$ . The original significant effect of the boredom manipulation on meaninglessness became smaller after controlling for participants' level of boredom,  $B = 0.67$ ,  $SE = 0.39$ ,  $p = .09$ , and 5,000 accelerated and bias-corrected bootstraps (Hayes, 2009) confirmed the existence of a significant mediated effect,  $0.08 < B_{.95} < 1.08$ .
5. A total of 15 students listed three groups that to which they belonged and that they considered to be an important part of who they were and next indicated the extent to which they identified with each group (1 = *not at all*, 7 = *very much*). A repeated ANOVA confirmed the existence of a significant linear trend,  $F(1, 14) = 17.44$ ,  $p < .001$ ,  $\eta^2 = .56$ , indicating that the identification decreased for each successive group ( $M_{\text{Group1}} = 6.13$ ,  $SD_{\text{Group1}} = 1.06$ ;  $M_{\text{Group2}} = 5.60$ ,  $SD_{\text{Group2}} = 1.18$ ;  $M_{\text{Group3}} = 4.73$ ,  $SD_{\text{Group3}} = 1.94$ ; respectively).
  6. A similar mediation analysis as in Notes 2 and 4 (Studies 2–3) confirmed that participants' experienced boredom predicted meaninglessness,  $B = 0.46$ ,  $SE = 0.13$ ,  $p < .001$ . The original significant effect of the boredom manipulation on meaninglessness was no longer reliable when controlling for participants' level of boredom,  $B = 0.73$ ,  $SE = 0.48$ ,  $p = .53$ , and 5,000 accelerated and bias-corrected bootstraps (Hayes, 2009) confirmed the existence of a significant mediated effect,  $0.32 < B_{.95} < 1.42$ .
  7. Similarly, a repeated measures ANOVA with the standardized shamrock evaluations and a factor representing the three neutral symbols as dependent variables, and the boredom induction as independent variable indicated no significant effect of the type of symbols ( $F < 1$ ), a significant effect of the boredom induction,  $F(1, 58) = 6.13$ ,  $p = .02$ ,  $\eta^2 = .10$ , and—most importantly—the predicted qualifying interaction,  $F(1, 58) = 4.77$ ,  $p = .03$ ,  $\eta^2 = .08$ .
  8. Similar mediation analyses on the specific symbols and the neutral symbols factor did not indicate mediation.

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