BOREDOM

AND ITS PSYCHOLOGICAL CONSEQUENCES:

A MEANING-REGULATION APPROACH

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ABSTRACT

This thesis by publication documents the results of a three year PhD research project investigating boredom. Even though boredom is a common experience that has been suggested to hold major implications for life and society, surprisingly little research has been conducted on its experiential character and its consequences. The research presented in the current thesis sought to fill this void.

Following the observation that boredom involves a lack of perceived meaning in one’s activities or circumstances, it was hypothesized that boredom triggers self-regulation attempts aimed at re-establishing a sense of meaningfulness. Five articles are included that detail the results of a systematic study of boredom and the effects of this 'meaning-regulation' process on a variety of important factors.

After introducing the broader theoretical framework in Chapter 1, the four studies of Chapter 2 confirmed that bored people experience a lack of perceived meaningfulness and are motivated to engage in meaningful courses of action. Chapter 3 includes five studies that help define meaningful behavior from an expectancy-value perspective. Consistent with the notion that social identification contributes to a sense of meaningfulness, the five studies reported in Chapter 4 indicate that boredom leads to polarization of in- and outgroup attitudes. The seven studies included in Chapter 5 reveal that boredom can counter-intuitively make people act more prosocially, if this behavior presents an opportunity to act meaningful. The ten studies of Chapter 6 indicate that boredom increases feelings of nostalgia, and nostalgia subsequently contributes to bored people’s meaning in life. The overall findings, their implications, their limitations, and future research directions are discussed in Chapter 7.

Overall, the research presented in the current thesis indicates that boredom increases social identification, prosocial behavior, and nostalgia, and these consequences of boredom can be explained according to a meaning-regulation approach.
DECLARATION

This research was in part funded by a PhD scholarship grant from the Irish Research Council for the Social Sciences and Humanities (IRCHSS).

The ethical standards of the University of Limerick and the American Psychological Association (APA) were followed in the conduct of this PhD research.

This thesis is written in American English and formatted according to the American Psychological Association (APA) style (6th edition) to conserve the original format of the included articles.

A small portion of the data in this thesis was already collected during a prior Research Master’s education at Tilburg University in the Netherlands. These data are included as Study 1 of Chapter 3, Study 1a, 1b, 3, and 6 of Chapter 5. It was decided to include these data in order to conserve the original format of the included articles.

I declare that this thesis in my own original work. Any assistance or information I have received in developing the materials herein is duly acknowledged.

Limerick, November 4th, 2011, Wijnand A. P. van Tilburg
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The observation that my name is solely shining on the cover of this thesis should not be taken as evidence that I spent the last years in intellectual and social solitude; my PhD was an interactive process in which many others were involved – either directly or indirectly. Descartes may have had his insights while ‘meditating’ in bed, Archimedes may have shouted ‘Eureka!’ while stepping in his bathtub (both presumably while being alone), but I neither manage to stay awake when meditating, nor own a bathtub; which made the option of working with others at the University of Limerick a quite attractive alternative. Importantly, the continuing support I have received from friends and family was a very pleasant experience that greatly helped me to successfully complete and enjoy my PhD.

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LIST OF ABBREVIATIONS

ANCOVA  Analysis of Covariance
ANOVA   Analysis of Variance
CFI     Comparative Fit Index
IRCHSS  Irish Research Council for the Humanities and Social Sciences
PANAS   Positive and Negative Affect Schedule
RMSEA  Root Mean Square Error of Approximation
SEM     Structural Equation Model
TLI     Tucker-Lewis Index
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CHAPTER 1

INTRODUCTION
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It is July 21. You are lying on the beach somewhere near the earth’s 40° North Latitude and it’s hot. Had you given it more thought, you would realize where exactly you are, but you feel far too relaxed to care about that. The only thing you care about right now is that this is much better than last week when you were still in your office, grading coursework in a country 13 degrees up north where the total amount of wet days computes to well over 150 per year (in the driest areas!) and where the highest temperature ever recorded equaled a pathetic 33.3°C (in 1887…). Sun, getting a tan, and best of all: enjoying a well-deserved vacation.

While relaxing in the sand, a group of Irishmen spots your Shamrock beach towel and asks you to join their beach volleyball competition against some Englishmen, but you don’t care about such sentiments on this sunny day. In the distance, you see a woman pursuing her umbrella that was caught by the wind, but you are feeling too comfortable to get up and help her. An elderly man settles next to you and starts telling nostalgic stories about his childhood. Quickly you pretend to sleep and you snore persistently until the man leaves you alone.

A week later, you are still lying on a beach somewhere near the earth’s 40° North Latitude and it's hot. Had you given it more thought, you would have realized that it would have been smart to book an early flight home: whereas you still enjoyed your holiday last week, you are now feeling as if life was never this meaningless. The sun has looked the same ever since, your tan has turned into sunburn, and worst of all: your well-deserved vacation has become utterly boring.

Shifting restless in the sand, you spot your Shamrock beach towel, you stand up, and you start running around in search for the group of Irishmen to play in their beach volleyball competition and show those Englishmen, but none of them are to be found. You search in the distance for a woman to help, hoping to be of some significance to her. Finally, you see an elderly man lying next to you and you start telling him nostalgic
The experience of boredom is not just reserved for people who overestimate the time they want to spend on sunny beaches. Rather, boredom plays an important role in the lives of the members of various groups, including drug users, eating disorder patients, joy-riders, narcissists, pathological gamblers, sensation seekers, students, the aggressive, the anxious, the depressed, the employed, and the unemployed (for an overview see Vodanovich, 2003). Assuming that more or less everyone belongs to at least one of these groups, it is fair to say that boredom is a common experience.

What does boredom do to people? What do bored people feel, think, and want? Is boredom just an annoying experience, an unfortunate byproduct of postmodern society that needs to be ignored if not avoided, or does boredom yield some greater psychological significance? How does boredom affect everyday life behavior, how we relate to others, and what perceptions we hold of our existence? In the current thesis, these questions will be addressed by empirically examining boredom and its effects on a host of important social psychological phenomena. Specifically, it is suggested that boredom is an affective experience that includes a rich spectrum of feelings, cognitions, motivations, and behavioral tendencies that ultimately link boredom to nothing less than the meaning in life; the experience of boredom is argued to signal a need to engage in meaningful behavior, and boredom therefore triggers a strong self-regulatory process that can produce a variety of responses.

**Theoretical Framework**

At first sight, it may be surprising to propose a relation between boredom and meaning in life. One might even argue that among all daily life experiences, those that involve boredom are probably least related to a seemingly intellectual and philosophical topic as ‘meaning’. Intriguingly, it is in fact this lack of purpose that links boredom so
closely to meaning; people are strongly motivated to perceive their lives as meaningful and boredom is therefore proposed to trigger strong ‘meaning re-establishment’ attempts. Essentially, the research presented in this thesis is guided by the above reasoning which is subsequently referred to as meaning-regulation. Briefly stated, it is suggested that the experience of boredom involves a subjective lack of personal meaningfulness and motivates attempts to re-establish a sense of meaningfulness. As a consequence, boredom can promote a range of responses, including ingroup valuation, outgroup devaluation, prosocial behavior, and nostalgia, provided that these responses are believed to offer a source of meaningfulness. To understand the psychological processes involved in meaning-regulation it is imperative that its key elements are explained in more detail. In what follows, relevant literature in relation to boredom, perceptions of meaningfulness, self-regulation, and meaning-regulation is discussed.

**Boredom**

As mentioned above, boredom is a quite common experience that is probably familiar to many people at some point in life. Given that boredom is so prevalent in life, one would expect that this phenomenon would already have been subjected to a detailed psychological investigation in the past. Strikingly, however, this is far from the case. Although several correlates have been identified with individual differences in the tendency to *become* bored, few studies have addressed the psychological signature of *feeling* bored. This was recognized by Vodanovich (2003) – one of the main boredom researchers in the field – who suggested more than 25 years after Farmer and Sundbergs’ groundbreaking 1986 article on boredom proneness that “a shortcoming of the boredom literature is the absence of a coherent, universally accepted definition” (p. 570). Notwithstanding boredom’s apparent commonality, consensus regarding what it actually is has hence not been formalized (see also Leary, Rogers, Canfield, & Coe, 1986). In fact, Fahlman, Marcer, Gaskovski, Eastwood, and Eastwood simply
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concluded that boredom can refer “to a wide range of experience, from trivial and transient dissatisfaction, to extreme chronic suffering” (2009, p. 307).

A generally accepted definition of boredom seems to not yet exist, but several scholars have nonetheless proposed their own understanding of what ‘boredom’ refers to and have forwarded potential antecedents and consequences of boredom that contribute to a global understanding of this experience. A famous early psychological understanding of boredom was forwarded by Fromm (1955), who stressed boredom’s aversive character by stating that “among all evils of life, there are few which are as painful as boredom and consequently every attempt is made to avoid it” (p. 202) and who wrote “I am convinced that boredom is one of the greatest tortures. If I were to imagine Hell, it would be the place where you were continually bored” (1963/2004, p. 150). In other words, boredom appears to be a quite unpleasant feeling.

Especially since the 80s – around the time that the first main boredom measures were developed – numerous suggestions were made to pin-point boredom’s defining characteristics. With regard to its psychological signature and antecedents, O’Hanlon described boredom as a “unique psychological state that is somehow produced by prolonged exposure to monotonous stimulation” (1981, p. 54). Similarly, Hill and Perkins argue that “boredom occurs when [a] stimuli is construed as subjectively monotonous” (1985, p. 237), and Mikulas and Vodanovich characterize boredom as “a state of relatively low arousal and dissatisfaction which is attributed to an inadequately stimulating environment” (1993, p. 1). In addition, Csikszentmihalyi (e.g., 1990, 2000) suggests that boredom involves a subjective mismatch in the level of challenge involved in a task and one’s ability, with either the task challenge being too low or one’s ability being too high.

As evident in the above conceptualizations, boredom seems closely related to a dissatisfying lack of challenge, variety, or stimulation. Leary and colleagues (1986)
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noted that boredom is more than just a negative subjective experience that accompanies the unfulfilled desire for stimulation, challenge, or variety; rather, boredom was proposed to entail a wide spectrum of psychological elements, including particular “situational antecedents, psychological correlates, phenomenological concomitants, and behavioral consequences” (p. 968). These researchers made an important contribution by forwarding the view that boredom also encompasses a motivational component.

Similarly, Barbalet (1999) suggests that boredom involves a restless feeling that motivates action aimed at changing the current situation, and this motivational character differentiates boredom from the resignation that is commonly associated with feeling depressed or experiencing ennui. For example, whereas someone who is depressed on the beach may adopt the conviction that life is meaningless and may subsequently do nothing at all, someone who is bored on the beach may desperately seek opportunities to alleviate the current perceived lack of meaning.

In order to understand the intriguing motivational and cognitive processes involved in boredom, it is important to note that some social scientists and philosophers proposed that part of the psychological signature of boredom involves an existential connotation, as illustrated in the beach scenario above. For example, Schopenhauer contended in his essay “On the Vanity of Existence” that:

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, trans. 2009, p. 357)

In a similar vain, the sociologist Barbalet (1999) more recently stated that boredom “is a restless, irritable feeling that the subject’s current activity or situation
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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). In sum, boredom has been suggested to be directly related to people’s perceived meaning in life and the appraised meaningfulness of their behaviors.

As can be observed from the above quotes and definitions, the existing conceptualizations of boredom are unfortunately not entirely similar in their particular content. On the broader level, however, it seems reasonable to argue that boredom involves a negative subjective state in which people typically are dissatisfied, feel restless, and lack stimulation. The situation or activity at hand is perceived to be devoid of purpose, unchallenging, and uninteresting, and calls for action aimed at either avoiding or altering the boring situation to increase levels of stimulation, challenge, interest, and meaning. In what follows, some of the key findings of boredom research are briefly highlighted.

Psychometric Boredom Research

Since the 1980s there has been a small but steady increase in the amount of psychological research into boredom, especially from a psychometric perspective. In fact, probably the largest area of boredom research consists of the analysis of the psychometric properties and correlates of scales that measure the individual propensity to become bored. Typically, this psychometric research aims to develop valid and reliable measures of boredom, to identify the dimensionality of boredom measures, and to identify important boredom correlates. Within this area, by far most research has been conducted with regard to the boredom proneness scale (Farmer & Sundberg, 1986), but boredom measures also exist for more specialized areas such as job boredom (Lee, 1986) or sexual boredom (Watt & Erwin, 1996), and Zuckerman’s (1979) established sensation seeking scale includes susceptibility to boredom as one of its subscales.
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The boredom proneness scale (Farmer & Sundberg, 1986) – the most often used boredom assessment tool – has been frequently examined and will be discussed here because it has provided key insights into boredom. This scale consists of 28 statements (e.g., “Many things I have to do are repetitive and monotonous”) for which participants choose whether each is true or false for them. Most recent research using the boredom proneness scale, however, has adopted interval-scale response formats that range from 1 to 7 as advocated by Kass and Vodanivich (1990). In a review of the boredom proneness scale by Vodanovich (2003), the overall reliability of the boredom proneness scale was noted to be adequate with reported test-retest correlations around 0.80 and also an internal reliability close to 0.80.

One particularly interesting direction in psychometric research on boredom in general and research on the boredom proneness scale in particular is that this research aims to illuminate the dimensionality of boredom. Factor analyses of the boredom proneness scale suggest the existence of between two and five correlated dimensions that are labeled with relative consistency. Most consensus exists regarding the first two factors of the boredom proneness scale, which are usually interpreted as the tendency to become bored due to a lack of internal stimulation (e.g., due to a lack of creativity) and due to a lack of external stimulation (e.g., due to a lack of challenge). Less agreement exists regarding the other factors, which have received labels such as time perception, constraint, affect, patience, attention maintenance, and restlessness (e.g., Gordon, Wilkinson, McGown, & Jovanoska, 1997; Vodanovich, Watt, & Piotrowski, 1997). Notwithstanding the observation that the boredom proneness scale can be subdivided into multiple correlated factors, boredom proneness researchers have primarily focused on people’s overall boredom proneness scores.

Boredom proneness correlates. Given that considerable research has been conducted using the boredom proneness scale, what insights has this provided into
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boredom? Is boredom related to important facets of life? And what do people who are prone to feeling bored typically feel, think, want and do? Indeed, boredom proneness has been found to be associated with many factors across the domains of (dispositional) feelings, cognitions, motivations, and behaviors. Moreover, several of these boredom proneness correlates hold great relevance for the individual and society.

As discussed by Vodanovich (2003), boredom proneness is associated with a vast amount of negative affective states, including depression, loneliness, anxiety, negative affect, reduced positive affect, hostility, anger, and reduced work enjoyment, just to name a few (e.g., Buss & Perry, 1992; Farmer & Sundberg, 1986; Kass, Vodanovich, & Callender, 2001; Vodanovich, Verner, & Gilbride 1991). Regarding cognitive variables, the propensity to be bored has been found to positively correlate with factors such as people’s reduced need for cognition, a lack of attention, a lack of interest, introspection, and increased self-awareness (e.g., Gordon et al., 1997; Seib & Vodanovich, 1998; Watt & Blancherd, 1994). On the behavioral level, boredom proneness is associated with elevated levels of aggression, pathological gambling, and risky driving behavior (e.g., Blaszczynski, McConaghy, & Frankova, 1990; Dahlen, Martin, Ragan, & Kuhlman, 2004; Jenkins, Zyzanski, & Rosenman, 1979; Rupp & Vodanovich, 1997). These behavioral correlates are commonly explained according to the need for stimulation and the lack of impulse control that is common for those who are easily bored (e.g., Dahlen et al, 2004; Farmer & Sundberg, 1986; Kass & Vodanovich, 1990; Leong & Schneller, 1993; Watt & Ewing, 1996; Watt & Vodanovich, 1992). Based on these findings, a picture is formed that displays boredom proneness as a rather negative attribute, as being easily bored is associated with a host of aversive phenomena.

**Limitations of psychometric boredom research.** Evidently, the psychometric investigation of boredom has provided invaluable insights into boredom. Numerous
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affective, cognitive, and behavioral correlates of boredom have been identified that illustrate the important role of boredom throughout many domains of life, on the level of the individual as well as in relation to society as a whole. Notwithstanding the great value of psychometric boredom research, there are a few methodological aspects that limit the implications of this research; these limitations relate to the following issues that will be discussed in the paragraphs below: distinguishing boredom antecedents, correlates, and consequences, the propensity for getting bored versus the state experience of boredom, and the circular approximation of boredom’s content.

Ultimately, it is suggested that boredom should also (but not exclusively) be investigated experimentally and as a state experience.
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**Distinguishing boredom antecedents, correlates, and consequences.** Due to the correlational nature of boredom research in psychometrics, it is very hard to evaluate the causal direction between boredom and related variables. Consider for example the finding that boredom proneness is negatively correlated with the need for cognition (Seib & Vodanovich, 1998; Watt & Blancherd, 1994). Do people with a low need for cognition fail to enjoy the engagement in elaborate thinking because they are so easily bored, or are these people likely to feel bored because they do not enjoy engaging in deep thoughts? This limitation becomes more problematic when considering that spurious relationships may exists between boredom proneness and its correlates. For example, being lonely is associated with both elevated boredom proneness (Farmer & Sundberg, 1986) and increased aggressive tendencies (Check, Perlman, & Malamuth, 1985). Could it be that loneliness makes people perceive themselves to be more easily bored, and loneliness simply *also* makes people behave more aggressive towards society and its members? Essentially, psychometric research on boredom does not clearly reveal how the various boredom correlates can be causality ordered, which makes it hard to identify boredom antecedents and consequences.

**Propensity for getting bored versus state of boredom.** Another limitation of psychometric boredom research is that it focuses almost exclusively on individuals’ propensity to become bored. Unfortunately, this particular focus makes it hard to infer how it *feels* to be bored, what *thoughts and motivations* are triggered by the momentary experience of boredom, and what the *short term behavioral consequences* of boredom are. Specifically, measures of the propensity to become bored fail to clearly differentiate between what is part of the boredom experience and what is not. Consider the finding that easily bored people tend to be more angry and aggressive (e.g., Dahlen et al., 2004); does boredom lead to subsequent aggressive behaviors as a result of the motivation to regulate an optimal level of arousal? Alternatively, does feeling bored simply *include*
angry sentiments, which people may vent in aggressive acts directed towards whatever lends itself available? Importantly, if the former is true then an effective strategy to reduce aggression due to boredom may aim at offering alternative sources of stimulation, such as playing pinball. If the latter is true, however, then introducing a pinball machine could cause the bored person to damage it in an act of aggression. Essentially, the outcomes of boredom would thus greatly differ depending on whether aggression is or is not part of the boredom experience itself. In conclusion, understanding the content of the actual state experience of boredom is important as it provides detailed insights into the psychological dynamics associated with this experience.

Circular approximation of content. An important aim of the psychometric examination of boredom has been to identify boredom’s underlying dimensionality. Typically, this is done by statistically estimating how co-variation across boredom measurement variables can be summarized into major factors or components that represent a relatively large proportion of the overall variance which then is presumed to reflect boredom’s key dimensions (e.g. internal and external stimulation). For example, research on the boredom proneness scale suggests that between two and five main factors underlie the entire measured construct (e.g., Vodanovich, 2003). Although factor analyses are an essential and invaluable statistical means for making results interpretable and developing less error prone aggregate indicators, there exists a risk in using the extracted factors as conceptual indicators of boredom’s characteristics. Factors can simply reflect how strongly similar items are represented or co-vary in a scale, and the likelihood that a separate factor emerges for a group of related variables increases with the relative amount of related variables and their strength of association. As a result, a factor such as ‘external stimulation’ may come forward as a major distinct dimension underlying the boredom construct even though this could merely reflect that
external stimulation was overrepresented in the scale’s items. In essence, using factor analytic techniques to understand a concept’s underlying structure definitely has its merits, but results should be interpreted with some caution as the outcome critically depends on what items were entered (Allport, 1961; for a similar critique on factor analysis as a proxy for the dimensionality of personality see Silvia, 1999).

**Experimental and State Boredom Research**

One potentially effective means for addressing the three limitations associated with the psychometric methods detailed above is adding an experimental paradigm and additionally focusing on the state experience of boredom. As mentioned before, most boredom research has focused on dispositional boredom measures and their psychometric properties. A select amount of studies, however, has looked into the state experience of boredom, usually in an experimental setting. Although these studies are limited in number, some key insights into boredom have been formed. Some key insights from these studies are briefly highlighted below.

One insightful study examining the state of boredom was conducted by Walbott (1998) who examined the bodily expression of boredom and other affective states by asking professional actors to act these out. The typical expression of boredom involved a collapsed upper body while leaning the head backward and engaging in very few movements. Moreover, Smith and Elsworth (1985) investigated the momentary experience of boredom by asking people to describe and evaluate typical experiences of boredom. The results of this study indicate that boredom is negative in valence, bored people have little on their minds, had a clear idea of what was going on, and they anticipate to act with little attention and little effort.

Consistent with the earlier notion that boredom is closely related to people’s perceived meaning in life (e.g., Barbalet, 1999; Schopenhauer, 1851, trans. 2009, p. 357), Fahlman and colleagues (2009) showed throughout correlational, longitudinal,
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and experimental studies that lacking meaning in life can make people feel more easily bored. This is an exciting finding as the psychological study of ‘meaning’ indicates that this concept plays a major role in the attainment of positive psychological functioning, and the motivation to perceive life to be meaningful has a wealth of important implications for everyday life behaviors (e.g., Greenberg, Koole, & Pyszczynski, 2004; Heine, Proulx, & Vohs, 2006; Steger, Frazier, Oishi, & Kaler, 2006). That is, boredom – once almost equated with subjective monotony – seems indeed directly related to nothing less than people’s perceived meaning in life.

Interestingly, a select amount of experimental studies confirms the presence of motivated consequences of boredom. In a fascinating set of experiments, Sansone, Weir, Harpster, and Morgan (1992) observed that state boredom – induced using a repetitive task – increased the use of strategies to facilitate interest in the boring task at hand. For example, boredom makes people try to come up with reasons why the task might nevertheless be important and interesting (e.g., adopting the believe that the task served health benefits). In another set of experiments, Smith, Wagaman, and Handley (2009) observed that the engagement in a boring task makes people more likely to adopt small task variations in their attempt to remain interested, especially when people adopted a promotion focus. Specifically, participants who focused on attaining positive outcomes (promotion focus) were more likely to creatively vary the use of capitalized and non-capitalized letters in the boring task of copying letters, possibly as a result of their increased levels of intrinsic motivation. Taken together, this experimental research indicates that boredom encourages people to engage in attempts to alter their current state. Moreover, these studies illuminate that boredom does not necessarily lead to ‘aversive’ outcomes such as aggression or disinterest, but boredom also facilitates creativity and the search for potential underlying value associated with the boring activity.
The observation that boredom is not merely a passive state but also serves as motivator is important. The recognition of boredom’s strong motivational character offers great new directions into understanding the consequences of boredom. Importantly, research on ‘meaning-regulation’ indicates that experiences associated with a lack of meaning (as seems to be the case for boredom) have implications that can last well beyond the particular ‘meaning-threat.’ Moreover, these implications affect many domains of great psychological significance. Indeed, the research by Sansone and colleagues (1992) and Smith and colleagues (2009) suggests that boredom signals to people that there is a need to engage in responses that may be helpful to remain interested and to search for the underlying value in the boring activity, which may reflect an overall attempt to re-establish a sense of meaningfulness that is lacking when people are bored. For those reasons, the main goal of the research reported in the present thesis was to investigate boredom’s link to meaning and the consequences of this link.

**Perceptions of Meaningfulness and Self-Regulation**

The most central arguments about boredom posited in this thesis evolve around the concepts of ‘meaning’ and ‘meaningfulness’ and how people regulate a lack of this. In what follows, the central processes associated with these factors are briefly highlighted.

Psychological research has recognized that it is very important for people to perceive their lives and actions to be meaningful (e.g., Greenberg, Koole, & Pyszczynski, 2004; Heine Proulx, & Vohs, 2006; Steger Frazier, Oishi, & Kaler, 2006). Indeed, having a sense of meaningfulness correlates with many positive factors, including life satisfaction, happiness, and work enjoyment (e.g., Bonebright, Clay, & Ankenmann, 2000; Chamberlain & Zika, 1988; Debats, Van der Lubbe, & Wezeman, 1993), whereas lacking meaningfulness involves decreased well-being, depression,
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anxiety, and substance abuse, just to name a few (Adler & Fagley, 2005; Debats et al., 1993; Harlow, Newcomb, & Bentler, 1986; see also Steger et al., 2006).

Given the apparent psychological significance of meaning, what is usually meant with this concept, and how is it operationalized throughout contemporary psychological research? Even though the concept of meaning plays an important role in psychology, definitions of this concept vary somewhat. For example, Heine and colleagues (2006) suggest that meaning is “what connects things to other things in expected ways” (pp. 90-91) and Baumeister (1992) stated that meaning is a “shared mental representation of possible relationships among things, events, and relationships” (p. 15). Other researchers, however, commonly associate meaning with concepts such as personal growth, self-transcendence, and fulfilling personal possibilities (e.g., Deci & Ryan, 2000; Kasser and Sheldon, 2004; Ryan & Deci, 2004; Ryff & Singer, 1998). One observation from these different definitions of meaning is that meaning seems to involve both a cognitive component (e.g., making sense of the world) as well as a motivational component (e.g., pursuing valued goals); the former component may relate primarily to general overarching perceptions of meaning in life whereas the latter may primarily be involved in the appraised meaningfulness of specific behaviors (see Chapters 3 & 7 for a more detailed investigation and discussion of motivational and cognitive components of meaning).

It is proposed that people who are bored perceive that their current behavior or situation lacks meaning. This perception poses a dilemma because people are generally motivated to maintain the view that life and their behaviors are meaningful. How will bored people react to this inconsistency? What can bored people do to resolve this apparent inner conflict? Interestingly, research in the domain of self-regulation has led to many insights into how people generally deal with such dilemmas.
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**Self-regulation.** According to Vohs and Baumeister (2004), *self-regulation* “encompasses any efforts by the human self to alter any of its own inner states or responses” (p. 2) and these efforts can both consciously and unconsciously affect various psychological states, including cognitions, affect, motivations, and behaviors (Baumeister & Vohs, 2004). For example, listening to comforting music after attending a funeral can reflect a self-regulation attempt to alleviate one’s sad mood. Similarly, drinking caffeinated beverages in order to concentrate on writing an article after a night of poor sleep may be a self-regulation strategy aimed at increasing the levels of concentration that are required for writing a high quality piece of work.

How do people self-regulate and what triggers self-regulatory processes? An important assumption in self-regulation theorizing is the presence of psychological ‘feedback loops’ that inform the self about discrepancies between a perceived value (e.g., current state) relative to some internal reference standard (e.g., a personal goal; Carver, 2004). Consider the above example of drinking caffeinated beverages in order to concentrate on writing an article after a night of poor sleep: In this example the **perceived value** may refer to the current state of low concentration due to the lack of sleep, whereas the **internal reference standard**, or goal, may refer to the ideal level of concentration required to write a good article. In this example, the discrepancy exists between the current low levels of concentration relative to the levels of concentration required in order to write a high quality article. Through a psychological feedback process, discrepancies such as these can trigger responses aimed at either **reducing** or **avoiding** the difference between the current state and the internal reference.

As discussed by Carver (2004), **reducing** discrepancies typically involves either altering the current perceived value (e.g., increasing current levels of concentration by drinking a caffeinated beverage) or adjusting the internal reference standard (e.g., being satisfied with only a mediocre quality article that can be written with little
concentration). In some specific cases, discrepancies trigger *avoidance* responses and these typically occur when people wish to *prevent* a state that does *not* satisfy an internal standard; in such a case, people wish to *increase* the discrepancy with an *undesired* internal standard (also referred to as an ‘anti-goal’; Carver, Lawrence, Scheier, 1999). Carver (2004) exemplifies this process with an adolescent who rebels against his parents in order to prevent being similar to them (p. 15). In sum, three main self-regulatory responses can be distinguished when a discrepancy exists between perceptions of a current state relative to an internal reference: people try to reduce the discrepancy by altering the current state, people try to reduce the discrepancy by altering the internal reference, or people increase the discrepancy when the internal reference is undesirable.

The self-regulatory processes discussed above play a role in a wide range of different domains. Self-regulation attempts have been observed in relation to altering affective states, avoiding temptations, managing self-esteem, interacting with others, and many more (see Baumeister & Vohs, 2004). Intriguingly, research suggests that processes closely related to self-regulation also play a pivotal role in people’s attempts to maintain a sense of meaningfulness (e.g., Heine et al., 2006). In what follows, the general self-regulatory aspects of this process are highlighted, two prominent models that deal with meaning-regulation are briefly discussed, and finally a meaning-regulation approach is proposed that guided the research on boredom in the following chapters.

**Meaning-regulation.** As described above, maintaining a sense of meaningfulness greatly contributes to positive psychological functioning (e.g., Greenberg et al., 2004; Heine et al., 2006; Steger et al., 2006). Unfortunately, there exist many situations in life that may to some extent challenge people’s sense of
meaningfulness, be it on a specific level (e.g., feeling devoid of meaning in the activity at hand) or on a more general level (seeing your current life as meaningless).

One frequently studied ‘meaning-threat’ in experimental social psychology is mortality salience – a condition in which people are implicitly or explicitly reminded that they will inevitably die (Greenberg, Pyszczynzki, & Solomon, 1986; 1997; Greenberg et al., 2004; Solomon, Greenberg, & Pyszczynzki, 2004). Next to mortality salience as a source of meaninglessness, several other factors have been identified that are detrimental to people’s current sense of meaningfulness or meaning in life, including uncertainty (Van den Bos, 2004; Van den Bos, Poortvliet, Maas, Miedema, & Van der Ham, 2005), ostracism (e.g., Case & Williams, 2004; Williams, Shore, & Grahe, 1998), loneliness (Van Tilburg & Igou, 2011b), and certain existential life contemplations (King, Hicks, & Abdelkhalik, 2009; Van Tilburg & Igou, 2011c). In self-regulation terms, there thus sometimes exists a discrepancy between the general goal of maintaining a sense of meaningfulness and the current state in which meaning is lacking. Given that such discrepancies can subsequently trigger self-regulation attempts (Carver, 2004) several responses can be anticipated as a result of meaning-threats.

First of all, people may try to reduce the discrepancy between current perceived and internally desired levels of meaningfulness by adopting responses that heighten a sense of current meaningfulness. This type of response was of main interest in the current research and will be discussed in much greater detail below. Secondly, people may try to reduce the discrepancy by lowering their internal representation of life being meaningful, for example by adopting the view that life is utterly meaningless. Heine and colleagues (2006) speculate that such responses may be common among people who commit suicide and that this type of discrepancy reduction occurs in those who are unable to increase meaningfulness through the engagement in their daily activities.
Following Carver (2004), a third possibility may be that people who wish to avoid  *lacking* meaning rather than who wish to  *attain* meaning enhance the discrepancy between the current perceived lack of meaning and the lack of meaning they generally wish to avoid. Although the motivational process is these two cases are slightly different, their effects on behavior could be similar: the current level of meaning is sought to be increased.

In sum, a variety of self-regulation consequences could be expected when people lack a current sense of meaningfulness. The vast majority of meaning-research has focused on the first self-regulatory strategy: discrepancy reduction by means of increasing perceptions of current meaningfulness (e.g., Greenberg et al., 2004; Heine et al., 2006). For that reason, the focus of the current thesis is on this particular self-regulatory strategy. Most past existential psychology research has been conducted based on the predictions derived from terror management theory (Greenberg et al., 1986; 1997; 2004). Moreover, the meaning maintenance model (Heine et al., 2006) was recently introduced as a broad and inclusive model on general existential psychological processes. For those reasons, these two models are briefly discussed below.

**Terror management theory.** The vast majority of experimental existential psychology research has been conducted based on predictions derived from terror management theory. Developed in the early eighties, this theory builds on the classic writings of psychologists including Fromm (e.g., 1947, 1955), Rank (1941/1958; 1978a; 1978b), and Becker (e.g., 1973; Greenberg et al., 1986; 1997; 2004; Solomon et al., 2004), and addresses the effects of people’s awareness of mortality.

According to terror management theory, a uniqueness of humans compared to other animals is their capability to reflect upon the end of their limited existence. This human ability poses a psychological paradox: Because humans are fundamentally motivated to ‘self-preserve’ – that is, to survive – the realization that life is limited by
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death leads to a ‘terrifying’ conflict. People find it hard to perceive a life that will
inevitably end as meaningful and hence are motivated to protect life’s perceived
meaningfulness by engaging in defensive strategies. The adherence to cultural
worldviews such as religion, ideologies, or group-based beliefs, can be boosted as a way
to defend meaningfulness by offering a sense of symbolic immortality that helps people
to ‘transcend’ their own limited existence. For example, adhering to a group (e.g., the
Irish) may affirm life’s continuity by making people feel part of something that is
greater than the individual and that lasts beyond the persons’ death, hence providing a
sense of symbolic immortality. In fact, worldviews such as religious beliefs in an
afterlife may even provide people with the conviction that they are literally immortal. In
addition, terror management theory posits that meaning is strongly related to self-
esteeem, which in the context of terror management theory constitutes that “one is a
person of value in a world of meaning” (Solomon et al., 2004, p. 17). Based on the
above assumptions, terror management theory makes two critical claims: First of all, the
mortality salience hypothesis states that reminding people of their mortality will
increase their adherence to cultural worldviews that imbue the world with meaning.
Secondly, terror management theory proposes that self-esteem serves as a ‘buffer’
against existential threats; the higher people’s self-esteem is, the less they are affected
by existential threats.

On the whole, it is fair to say that quite a lot of support for terror management
theory’s predictions has accumulated. Many articles have been published showing that
mortality salience increases the adherence to worldviews, including religious views
(Norenzayan & Hansen, 2006), western materialism (Kasser and Sheldon, 2000),
political conservatism (Jost, Fitzsimons, & Kay, 2004), ingroup beliefs (Greenberg et
al., 1997), and support for cultural leaders (Landau et al., 2004). Moreover, several
studies have identified that those with high self-esteem are less prone to mortality
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salience effects (e.g., Arndt & Greenberg, 1999; Harmon-Jones, Simon, Greenberg, Pyszczynzki, Solomon, & McGregor, 1997). During recent years, however, other 'existential threats' besides mortality salience have been identified as well. For example, not only mortality salience but also uncertainty has been found to elicit worldview defense reactions (Van den Bos, 2004; Van den Bos, Poortvliet, Maas, Miedema, & Van der Ham, 2005). In addition, ostracism has been found to lower a sense of meaningfulness and mimics mortality salience effects (Case & Williams, 2004; Williams Shore, & Grahe, 1998), and loneliness has been found to have similar effects on prosocial behavior as mortality salience (Joireman & Duell, 2005; Jonas, Schimel, Greenberg, Pyszczynzki, 2002; Van Tilburg & Igou, 2011b). Partially in response to these recent developments, Heine and colleagues (2006) forwarded the meaning maintenance model as a more general framework for integrating these various areas of meaning research.

**The meaning maintenance model.** The meaning maintenance model (Heine et al., 2006) describes what people do in order to maintain the view that life is meaningful. After reviewing a wide range of meaning research, these researchers suggest that meaning is derived from four critical psychological variables: self-esteem, symbolic immortality, belongingness, and certainty. Specifically, the researchers suggest that people’s sense of meaningfulness – which they conceptualize as “what connects things to other things in expected ways” (p. 90) – depends on the extent to which people have high self-esteem, on the extent to which they are able to transcend their own mortality (akin to terror management theory), on the extent to which people fulfill the need to feel socially connected to others, and on the extent to which they experience a sense of control or certainty.

According to the meaning maintenance model, sources of meaning and also meaning-threats typically fall into one or more of the abovementioned four domains.
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For example, mortality salience is a meaning-threat because it denies the anticipated continuation of life, whereas beliefs in afterlife provide a source of meaning because they affirm beliefs of immortality. Similarly, ostracism presents a meaning-threat because it dissatisfies people’s need to belong, whereas establishing relationships provides a meaning source because it heightens people’s sense of belongingness. Next to these four key domains of meaning, the meaning maintenance model specifies that people are fundamentally motivated to create and maintain a sense of meaningfulness. This ‘meaning maintenance’ is established using a variety of strategies, including revision of existing meaning-structures and reappraising meaning-inconsistent targets. An intriguing additional mechanism that is part of the meaning maintenance model is that meaning can be maintained in a process that is referred to as ‘fluid compensation:’ Threats to meaning in one domain can lead to bolstering meaning in another domain. For example, according to the meaning maintenance model, a meaning-threat in the form of mortality salience – which relates to the symbolic immortality domain – could elicit relationship formation – which relates to the domain of belongingness. In essence, the meaning maintenance model specifies that people are highly flexible in maintaining meaning.

A meaning-regulation approach to boredom. It is suggested that people who feel bored perceive their current situation or life as relatively meaningless (Barbalet, 1999; Fahlman et al., 2009; Schopenhauer, trans. 2009, p. 357), which is inconsistent with people’s general goal to perceive life as meaningful (e.g., Greenberg et al., 2004; Heine et al., 2006; Steger et al., 2006). How do bored people deal with this inconsistency? Based on the general self-regulation assumptions outlined by Carver (2004) and the notion of ‘fluid compensation’ described in Heine and colleagues’ meaning maintenance model (2006), a meaning-regulation approach is postulated that
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guided the boredom research in the following chapters. The reasoning behind this approach is detailed below.

People who experience boredom perceive that their current state lacks meaning and this poses a discrepancy with people’s goal (or internal reference) of maintaining a sense of meaningfulness. For example, being bored on the beach may involve the perception that one’s current activity is much more meaningless than what one ideally wants. This discrepancy is subsequently expected to trigger self-regulation responses. Following Carver (2004), one self-regulation strategy may be to reduce the discrepancy by increasing the current perceived meaningfulness. Hence, if meaningful courses of action are available, then bored people should be motivated to engage in these as means for re-establishing a sense of meaningfulness.

It should be noted that Carver (2004) reports two alternative self-regulation strategies that involve adjusting the internal reference and discrepancy avoidance, respectively. Given that attaining a sense of meaningfulness is considered to be a fundamental human need (Heine et al., 2006), it seems reasonable to assume that people would be reluctant to adjust their internal reference. With regards to discrepancy avoidance, this response may occur among those people who are primarily focused on avoiding meaninglessness rather than attaining meaningfulness. The eventual effects of these motivations on behavior may nevertheless be the same; both would trigger attempts aimed at increasing a sense of current meaningfulness (see also the discussion on regulatory focus in Chapter 7).

As outlined in the meaning maintenance model (Heine et al., 2006), responses aimed at restoring a sense of meaning can be pursued in many different forms, such as by increasing self-esteem, reducing uncertainty, increasing belongingness, or establishing a sense of symbolic immortality. Essentially, people are flexible when it comes to regulating meaning. To illustrate, a person who is bored on the beach may
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seek to re-establish meaningfulness by engaging in a variety of behaviors, ranging from competing with the ingroup against an outgroup in a volleyball competition, to helping someone in need, or retrieving nostalgic memories, provided that these activities are perceived to be helpful for re-establishing a sense of meaningfulness.

In essence, the meaning-regulation approach to boredom adopted in the present research was relatively straightforward: Bored people lack a current sense of meaningfulness, they subsequently are motivated to restore this sense of meaningfulness, and this motivates the engagement in behaviors that are perceived to hold the potential to gain a sense of meaningfulness. Courses of action that are both perceived to be meaningful and are available in a specific situation will thus be more likely to be adopted when people are bored relatively to when they are not bored.

The Present Thesis

A particularly interesting aspect of boredom is that it seems to involve a lack of meaningfulness (Barbalet, 1999; Fahlman et al., 2009; Schopenhauer, trans. 2009, p. 357). Given that meaning-threats trigger meaning-regulation attempts (Heine et al., 2006; Greenberg et al., 2004), it is likely that boredom’s motivational character may similarly trigger the meaning-regulation process detailed above. As reflected in Table 1, the current thesis includes four articles that report findings pertaining to meaning-regulation triggered by boredom (Chapter 2, & 4-5), and one article that specifies two important criteria relating to appraisals of behavior’s meaningfulness (Chapter 3).

Chapter 2: Boredom and Meaning (Van Tilburg & Igou, in press b)

In Chapter 2, research is reported in which it was investigated whether ‘meaning-regulation’ is indeed a feature of boredom, and whether this particular boredom feature also makes boredom different from other affective states. Throughout four studies, boredom’s distinctive signature was examined by first adopting a classic approach developed by Roseman, Wiest, and Swartz (1994), followed by validation
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measures and an experimental investigation of boredom’s experiential content. It should
be noted that in this particular article, the focus was not solely on boredom and meaning
but also on the link between boredom and challenge. Importantly, this article provides
the very foundation for investigating the meaning-regulation process triggered by
boredom in greater detail. In light of the topic of meaning, the research in this article
essentially confirms that boredom acts as a meaning-threat that may motivate
subsequent attempts aimed at re-establishing a sense of meaningfulness.

Chapter 3: The Meaningfulness of Behavior (Van Tilburg & Igou, 2011a)

Before examining what specific meaning-regulation attempts boredom triggers,
it was first examined in Chapter 3 what acts typically constitute ‘meaningful behavior.’
As discussed in the above section on meaning, there exists ambiguity regarding how
meaning can be approached. For that purpose, the research reported in Chapter 3 sought
to identify what factors affect whether behavior is considered to be meaningful or
meaningless according to people’s everyday life perspectives. By adopting the notion
that meaningfulness is related to goal pursuit (e.g., Kasser & Sheldon, 2004), a series of
five studies was conducted to examine the perceived meaningfulness of behavior from
an ‘expectancy-value approach.’ The results of these studies reveal that the extent to
which behavior is considered to be meaningful critically depends on whether the
behavior is (1) associated with a highly valued goal, and (2) instrumental in the pursuit
of this goal. Only when both these criteria are met, then behavior is considered to be
relatively meaningful. The critical contribution of this research rests in the observation
that an interaction between very basic self-regulatory elements (instrumentality x goal
value) captures people’s appraised meaningfulness of behavior. Essentially, it redefines
the presumably vague concept of meaning in quite straightforward and extensively
studied self-regulation terms. Although this research did not focus on boredom in
particular, it clarifies two important boundary conditions of behavior to emerge as a
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result of meaning-regulation attempts. Moreover, the pragmatic factors of goal value
and instrumentality play an important role in the research reported in Chapters 4 and 5.

Chapter 4: Boredom and Social Identity (Van Tilburg & Igou, in press a)

After identifying boredom’s meaning-regulation potential in Chapter 2 and
examining the pragmatic elements involved in meaning-regulation in Chapter 3,
Chapter 4 focuses on a classic meaning-regulation domain that has never been
empirically linked to the state experience of boredom. Specifically, a series of five
studies is presented illuminating how boredom polarizes attitudes towards in- and
outgroups – two expression of social identification processes that can help in dealing
with existential threats (Castano, Yzerbyt, PaSamini, & Sacchi, 2002; Castano, Yzerbyt,
& PaSamino, 2004; Pyszczynski, Greenberg, & Solomon, 1997). The results of these
studies indicate that boredom makes Irish people more favorable towards various
representations of their national ingroup, especially relative to attitudes towards an
outgroup representation. Furthermore, boredom made people more inclusive in their use
of social identities, indicating the pragmatic use of social identity in the attempt to
regulate meaning, and the effect of boredom on ingroup valuation was indeed mediated
by bored people’s motivation to engage in meaningful behavior.

Chapter 5: Boredom and Prosocial Behavior (Van Tilburg & Igou, 2011d)

After finding that boredom promotes the use of social identities as a meaning-
regulation strategy, Chapter 5 focuses on prosocial behavior as a meaning-regulation
attempt triggered by boredom. Numerous studies on boredom proneness have pointed
out that people who are easily bored score higher on measures of aggression, violence,
and hostility (e.g., Dahlen et al., 2004; Farmer & Sundberg, 1986). However, a series of
seven studies reveals that boredom can counter-intuitively promote prosocial responses
such as altruism, blood donation intentions, and charity support. Moreover, these studies
identify the critical moderating role of the instrumentality of prosocial behavior in the
pursuit of meaningfulness, illuminating the pragmatic nature of the meaning-regulation process that boredom triggers.

**Chapter 6: Boredom and Nostalgia (Van Tilburg, Igou, & Sedikides, 2011)**

Research is reported in Chapter 6 concerning a third meaning-regulation attempt triggered by boredom: the retrieval of nostalgic memories. Consistent with past research on the existential benefits of nostalgia (Juhl, Routledge, Arndt, Sidikides, & Wildschut, 2010; Routledge, Arndt, Sedikides, & Wildschut 2006; Routledge et al., 2010; Sedikides, Wildschut, Arndt, & Routledge, 2008; Sedikides, Wildschut, & Baden 2004), a series of ten studies reveals that people who feel highly bored are more inclined to retrieve nostalgic memories and feel more nostalgic relative to people who are little bored. Moreover, bored people’s motivation to establish a sense of meaningfulness mediates this relationship. Going a step further than the research in previous chapters, these studies on boredom and nostalgia also confirm that nostalgia ultimately helps bored people to attain a sense of meaningfulness as a result of the meaning-regulation attempt.

**Additional Notes**

The research presented in Chapter 2 through 6 is identical in content to the original separate articles. The benefit of this is that each of these chapters stands by itself and does not necessarily require the reader to first focus on previous chapters. Another inevitable consequence is, however, that there exists some overlap between the articles (which may induce mild levels of boredom in the reader).

It should also be noted that a small portion of the data in this thesis was already collected during a prior Research Master’s education at Tilburg University in the Netherlands. Specifically, these data are included as Study 1 of Chapter 3, and Study 1a, 1b, 3, and 6 of Chapter 5. Importantly, however, it was decided to report these studies in order to conserve the original format of the articles.
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Throughout the research presented and discussed in the current thesis, it is assumed that meaningfulness opposites meaninglessness and that meaninglessness equates a lack of meaningfulness. This notion is consistent past theorizing on meaning and meaning-regulation, including terror management theory and the meaning maintenance model. Moreover, sources of meaninglessness (e.g., mortality salience) typically trigger meaningful behaviors, suggesting that meaninglessness and meaningfulness are located on a single psychological dimension. In addition, the established presence of meaning in life scale (Steger et al., 2006) – one of the main psychometric tools for measuring meaning in life – includes both a reversed item and non-reversed items. Overall, it was deemed reasonable to assume that meaningfulness and meaninglessness can be treated as polar opposites, as done in past existential psychology research.

References


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1 It should be noted that using factor analysis strictly as a confirmatory data-analytic technique does not necessarily suffer from this limitation as the conceptual structure is in that case typically specified a priori. This does not apply to the boredom proneness scale, however, as the items of the original boredom proneness scale were not developed to load on different factors (Farmer & Sundberg, 1986). In fact, Silvia (1999) suggests that finding a multidimensional structure of a scale that was originally designed to measure a unidimensional concept does not necessarily indicate that the original conceptualization was wrong, but could also imply that the scale itself is a highly invalid measure of the concept in question.

2 In some specific cases however, adjustment of the internal standard may occur. For example, chronic experiences of boredom, especially in the absence of opportunities to engage in meaning-regulation, may ultimately make people regard life in general to be meaningless, which could perhaps partially explain the correlation between boredom proneness and depression (e.g., Farmer & Sundberg, 1986).
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Table 1

*Articles by Chapter and Their Primary Research Questions*

<table>
<thead>
<tr>
<th>Article Title</th>
<th>Chapter</th>
<th>Main Research Question(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Boredom: Lack of Challenge and Meaning as Distinct Boredom Experiences</td>
<td>2</td>
<td>Does boredom involve meaninglessness and the motivation to act meaningfully, and is this <em>distinctive</em> for boredom?</td>
</tr>
<tr>
<td>Meaning as Motivation: An Expectancy-Value Approach to the Meaningfulness of Behavior</td>
<td>3</td>
<td>Is it possible to conceptualize meaning in terms of the basic self-regulatory terms of <em>instrumentality</em> and <em>goal value</em>?</td>
</tr>
<tr>
<td>On Boredom and Social Identity: A Pragmatic Meaning-Regulation Approach</td>
<td>4</td>
<td>How does boredom affect evaluations of <em>ingroups</em> and <em>outgroups</em>, and what role does <em>meaning-regulation</em> play in this link?</td>
</tr>
<tr>
<td>Why Bored George Helps Others: A Pragmatic Meaning-Regulation Hypothesis on Boredom and Prosocial Behavior</td>
<td>5</td>
<td>Can boredom increase <em>prosocial behavior</em> as a meaning-regulation attempt, and what <em>boundary conditions</em> exist for this effect?</td>
</tr>
<tr>
<td>In Search of Meaningfulness: Using Nostalgia as an Antidote to Boredom</td>
<td>6</td>
<td>Can boredom increase the recollection of <em>nostalgic memories</em>, and what role does <em>meaning-regulation</em> play in this link?</td>
</tr>
</tbody>
</table>

*Note: Chapter 2 is derived from Van Tilburg & Igou (in press b), Chapter 3 from Van Tilburg & Igou (2011a), Chapter 4 from Van Tilburg & Igou (in press a), Chapter 5 from Van Tilburg & Igou (2011d), and Chapter 6 from Van Tilburg, Igou, & Sedikides (2011).*
CHAPTER 2 – ON BOREDOM

CHAPTER 2

ON BOREDOM:

LACK OF CHALLENGE AND MEANING AS DISTINCT BOREDOM EXPERIENCES
CHAPTER 2 – ON BOREDOM

On Boredom: Lack of Challenge and Meaning as Distinct Boredom Experiences

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CHAPTER 2 – ON BOREDOM

Abstract

Boredom is a common experience that affects people on multiple levels, including their thoughts, feelings, motivations, and actions. Not much research, however, has examined what makes the experience of boredom distinct from other affective experiences. Based on earlier research on boredom and our meaning-regulation framework, we conducted a series of four studies that demonstrate the distinct experiential content of boredom. More than other negative affective experiences (sadness, anger, and frustration), boredom makes people feel unchallenged while they think that the situation and their actions are meaningless (Study 1). The distinct experiential content of boredom is associated with boredom proneness (Study 2) and with state boredom experiences (Study 3). In addition, the distinct experiential content of boredom is affected by contextual features (Study 4). This series of studies provides a systematic understanding of what people feel, think, and want to do when bored, distinctive from other negative experiences.

Keywords: boredom, challenge, meaning, emotion
On Boredom: Lack of Challenge and Meaning as Distinct Boredom Experiences

It is Friday afternoon. You just completed your manuscript, you graded all homework assignments, you prepared your upcoming lectures, your research assistants are trained well enough to enter data without your advice, your friends have adapted to your academic career and are now able to enjoy themselves without your presence and – to make matters even worse – in the coming week there will be a public holiday with only trash on TV. Much to your surprise, you do not feel the long anticipated satisfaction of having nothing to do, instead you feel an emptiness, you don’t feel like standing up nor like sitting down; you are utterly bored. Fortunately, many people are able to understand your pain and may sympathize with you because boredom is a common emotion (Farmer & Sundberg, 1986), with some research estimating that between 18% and 50% of the population often feels bored (Klapp, 1986; see also Eastwood, Cavaliere, Fahlman, & Eastwood, 2007).

Given the prevalence of boredom, it is surprising that research on the experience of boredom has only started to gain attention within psychology during the last decades. Most boredom research has focused only on correlates of boredom proneness (e.g., Dahlen, Martin, Ragan, & Kuhlman, 2004; Farmer & Sundberg, 1986). Past research identified correlations between boredom proneness and phenomena such as job dissatisfaction (e.g., Kass, Vadanovich, & Callender, 2001), anxiety (Gordon, Wilkinson, McGrown, & Jovanoska, 1997), pathological gambling (e.g., Blaszczynski, McConaghy, & Frankova, 1990), aggression (e.g., Rupp & Vadanovich, 1997), and eating disorders (e.g., Stickney & Miltenberger, 1999). However, there is no clarity with respect to affective, cognitive, and motivational signature of state boredom, and in particular how this is distinct (i.e. different) from other affective states.

What do we know about the experience of boredom? First of all, we roughly know what bored people look like. Wallbott (1998) investigated the bodily expression
of actors imposing several emotional states – including boredom – and found that actors who act bored typically hold a collapsed upper body, lean their heads backwards, and engage in few bodily movements. Second, we know how bored people interpret their environment. In a classical study on cognitive appraisals of emotions, Smith and Ellsworth (1985; see also Leary, Rogers, Canfield, & Coe, 1986) found that boredom is a negative experience in which people make appraisals of low effort and little attention; bored people feel that they have little on their minds and they have a clear idea of what is going on.

Boredom can motivate an array of behaviors. Some of these behaviors are immediately aimed at reducing how boring an activity or situation is, for example by seeking challenge or stimulation (e.g., Csikszentmihalyi, 2000 Dahlen et al., 2004; Farmer & Sundberg, 1986; Harris & Segal, 1985; Vodanovich & Kass, 1990), interest or engagement (e.g., Fisher, 1998; Kanevsky & Keighley, 2003; Sansone, Weir, Harpster, & Morgan, 1992; Silvia, 2006), or fun (e.g., Smith, Wagaman, & Handley, 2009). Intriguingly, however, some motivated behaviors following from boredom surpass the activity or situation at hand. People who are bored seem motivated to engage in acts that provide them with a sense of meaning or purpose (e.g., Barbalet, 1999; Bargdill, 2000; Fahlman, Mercer, Gaskovski, Eastwood, & Eastwood, 2009). Building on this research, we argue that the experience of boredom makes one’s activities seem meaningless, motivating people to create or re-establish a sense of meaningfulness. That is, escaping or counteracting the influence of boredom is an escape from the very unpleasant impression that one’s activities are meaningless (e.g., Van Tilburg & Igou, 2011a, 2011b; see also Fromm, 1973). In order to achieve this goal, boredom does not motivate people to engage in one particular behavior; it motivates people to engage in any activity that seems meaningful to them. This hypothesis is consistent with recent approaches people’s meaning-regulation strategies.
For example, Heine, Proulx, and Vohs (2006) pose that people’s overarching goal is to strive for a sense of meaning via satisfying particular needs (e.g., symbolic immortality). If these needs are threatened (e.g., due to mortality salience), then people protect or re-establish a sense of meaningfulness. Psychological responses such as defending cultural worldviews (e.g., in-group favoritism and out-group derogation) or pursuing social connectedness (e.g., seeking relationships) can be used relatively interchangeably in order to maintain a sense of personal meaningfulness. In this regard, we understand boredom as a threat to the perception of meaninglessness, motivating bored people to eliminate or counteract this influence by re-establishing a sense of meaningfulness.

Crucially, we argue that boredom is an emotion ‘in its own right’; that is, boredom has a set of features that is not explainable by any other emotion. More specifically, ‘feeling unchallenged’ and perceiving one’s ‘activities as meaningless’ is central to boredom, whereas other boredom correlates such as ‘unpleasantness’, ‘lack of interest’, or ‘disengagement’ may be shared with many other emotions such as sadness. In essence, we argue that the concepts of challenge and meaning explain the difference of boredom to other emotional states particularly well, and they indicate why boredom is important with regards to meaning-regulation.

One important benefit of identifying boredom’s unique experiential is that this provides a basis for predicting actions that are distinct from other affective states (e.g., Eastwood et al., 2007), that is, because it helps to understand which consequences are directly stemming from boredom rather than from other co-occurring affective states that may arise while people are engaged in boring activities (e.g., frustration, sadness, or anger). Past research on state boredom has typically looked at boredom without specifying other affective states that may co-occur or overlap with boredom. In fact, in their pioneering boredom research, Farmer and Sundberg (1986) already highlighted the
importance of examining what makes boredom different from other affective states, yet such crucial systematic empirical work has still not been conducted (see also Vodanovich, 2003). Our research was therefore designed to examine the specific experience of boredom and how it is different from other emotional experiences; in order to fulfill this aim, we systematically analyzed several boredom experiences and investigated their relationship to chronic boredom proneness and temporary state boredom. Importantly, we focused in the current research especially on the lack of challenge and meaning associated with boredom because these two factors can promote responses that may hold implications for future behavior, even after a specific boring activity has finished (e.g., Csikszentmihalyi, 2000). Moreover, research has documented a vast amount of consequences of meaning threats such as mortality salience, uncertainty, low self-esteem, or a lack of social affiliation (e.g., Heine et al., 2006). Conceptualizing boredom as another type of meaning threat offers great potential for a fuller understanding of boredom and for meaning-regulation processes in general.

Overview

As the crucial starting point of our approach, we analyzed in Study 1 how boredom relates to five common experiential content domains: feelings, thoughts, action tendencies, actions, and emotivational goals (see Roseman, Wiest, & Swartz, 1994) in comparison to how other emotions related to this experiential content. This ‘experiential content’ would reflect the state of boredom, but more precisely it would reflect a particular state, one that makes boredom distinct from other affective states. The experiential content of boredom was then validated in Study 2 by correlating it to an often used boredom measure, the boredom proneness scale (Farmer & Sundberg, 1986). To investigate the validity of boredom’s experiential content in relation to the momentary experience of boredom, we correlated the distinct experiential content (i.e. distinct from other affective states) to participants’ state experience of boredom in Study
3. Finally, in Study 4 we tested whether boredom involves the distinct experiential experiences by manipulating state boredom. In addition, we tested whether the interpretation of the current situation (causal appraisal) would explain the effects of the boredom induction on its distinct experiential content.

**Study 1: Exploring Boredom’s Distinct Experiential Content**

What do people experience when they are bored? And how does this experience differ from other negative affective states? We followed the procedure proposed by Roseman and colleagues (1994; see also Frijda, Kuipers, & Ter Schure, 1989) to identify the experiential content of boredom as this approach has proven to be a successful way to assess the feelings, thoughts, action tendencies, actions, and emotivational goals that are typical for specific emotions. In addition, the method proposed by Roseman and colleagues seemed valuable as their method was particularly designed to investigate the distinct experiential content of affective states. This approach has proven to be valuable in examining the distinctive elements of emotions (see also Van de Ven, Zeelenberg, & Pieters, 2009) and the relatively broad focus is also consistent with the important early work on boredom by Leary and colleagues (1986), who stress that the experience of boredom involves an array of “situational antecedents, psychological correlates, phenomenological concomitants, and behavioral consequences” (p. 968).

We explored participants’ past experiences of boredom and compared them to the past experiences of sadness, anger, and frustration. Participants were asked to indicate to what extent particular feelings, thoughts, action tendencies, actions and emotivational goals would be descriptive of how they felt during their recalled experience. As critical comparative affective states, we included sadness, anger, and frustration. Sadness was selected because it resembles a more general and prototypical state of negative affect. Moreover, early boredom research emphasized the potential
difference between boredom and sadness (Farmer & Sundberg, 1986), yet these concepts have not yet been directly compared (see Vodanovich, 2003), even though boredom proneness is correlated with negative affect (e.g., Vodanovich, Verner, & Gilbride, 1991). We compared boredom to anger because both states have been found to correlate in the past (e.g., Rupp & Vodanovich, 1997); and assuming that a number of ‘boring’ tasks hinder the achievement of particular goals (e.g., having fun rather than having to copy letters; Smith et al., 2009), we chose to also compare boredom with frustration. Importantly, we predicted that boredom differs from sadness, anger, and frustration. In addition, we examined which contexts participants typically recalled in order to gain more insights into the situational characteristics of their boredom experiences.

Method

Participants and design. One hundred and six undergraduate students participated in this study and were randomly assigned to either one of the four emotion conditions (Emotion: Boredom vs. Sadness vs. Anger vs. Frustration) of a between factorial design. Two participants were excluded based on the outlier criteria proposed by Tabachnick and Fidell (2007), resulting in an effective sample size of 104 participants (60 females, 44 males; $M_{\text{age}} = 20.53$, $SD = 3.08$).

Procedure and materials. Students were approached on campus and asked if they were willing to participate in a short paper-and-pencil study on emotions. Upon agreement, participants filled out the consent forms and then gave us demographic information (age, sex). Participants then recalled and wrote down an experience of feeling bored, sad, angry, or frustrated. Specifically, they were asked to “describe what you experienced at that moment in such a way that another person would be able to easily imagine how you felt at that moment” in order to facilitate the detailed recollection of the experience. Next, they rated the experiential content of the emotion:
their feelings, thoughts, action tendencies, actions, and emotivational goals. Following Roseman and colleagues (1994), we included two items per experiential content domain for each emotion. The items had the following structure: “When you were feeling [emotion], how much did the feeling make you [experiential content]?” Items relating to sadness, anger, and frustration were taken from Roseman and colleagues and we generated items for boredom based on literature. Specifically, research suggests that boredom relates to a lack of challenge (e.g., Csikszentmihalyi, 2000), a lack of purpose or meaning (e.g., Barbalet, 1999; Fahlman et al., 2009), and a subsequent desire for changing aspects of the situation or to pursue challenge and meaning in subsequent behavior (e.g., Csikszentmihalyi, 2000; Smith et al., 2009). We focused especially on these domains of the proposed boredom experience because they seemed to be central to the boredom experience and may have a particularly pronounced impact on subsequent behavior (e.g., Sansone, 1992; Rupp & Vodanovich, 1997). Participants rated their agreement to all of the items on five-point interval scales ranging from 1 (not at all) to 5 (very much).

As reflected in Table 1, the boredom feeling items read “When you were feeling bored, how much did the feeling make you feel restless and unchallenged at the same time?” (Item 1) and “When you were feeling bored, how much did the feeling make you feel that you did not know what to do with your time?” (Item 2). The thought items read “When you were feeling bored, how much did the feeling make you unable to stop thinking about things you would rather do?” (Item 3) and “When you were feeling bored, how much did the feeling make you think that the situation served no important purpose?” (Item 4). The action tendency items read “When you were feeling bored, how much did the feeling make you feel like doing something completely different?” (Item 5) and “When you were feeling bored, how much did the feeling make you feel like doing something purposeful?” (Item 6). The action items read “When you were feeling
bored, how much did the feeling make you change to more exiting behaviors?” (Item 7) and “When you were feeling bored, how much did the feeling make you turn to a more meaningful activity?” (Item 8). Finally, the emotivational goal items read “When you were feeling bored, how much did the feeling make you want to do something more meaningful?” (Item 9) and “When you were feeling bored, how much did the feeling make you want to be challenged?” (Item 10). In the other emotion conditions, the items did not refer to boredom but to the other emotion in question (e.g., “When you were feeling sad . . .”) and ended with the experiential contents (see Roseman et al., 1994). Higher ratings indicate that an emotion has the particular experiential quality.

To summarize, participants rated all forty experiential content items (always two items relating to feelings, thoughts, action tendencies, actions, and emotivational goals) that seem typical for each of the four emotions, and this was done in all four emotion conditions. Afterwards, participants were shown a funny Calvin and Hobbes cartoon to enlighten their moods, and then they were thanked, debriefed, and rewarded for their participation.

Results

Results on individual items. We predicted that typical boredom experiences would be rated higher when boredom was recalled then when another emotion was recalled for each of the ten boredom items. For that purpose, we examined participants’ scores on these items across the conditions. First, we tested whether there were significant differences across all conditions using one-way analyses of variance (ANOVA) with Emotion as independent variable and each item relating to the experiential content of boredom as dependent variable. Next, we conducted planned comparisons testing the prediction that participants in the boredom condition would yield higher average ratings on each of the items relating to boredom’s experiential content compared to sadness, anger, and frustration. We only considered an item to
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measure the distinctive experience of boredom if it satisfied two important criteria: (1) the ANOVA revealed significant differences across the emotion conditions, and (2) the boredom item was rated significantly higher in the boredom condition compared to each of the other emotion conditions. We implemented this conservative test in order to very precisely identify the distinct emotional content of boredom experiences. As reflected in Table 1 and 2, the results of these analyses indicated that at least one item in all the five experiential content domains satisfied the criteria for being distinctive of boredom, totaling seven out of the ten items. Specifically, these analyses indicated that boredom involves feeling restless and unchallenged at the same time (Item 1) while thinking that the situation serves no purpose (Item 4). One wants to engage in behavior that is different and purposeful (Items 5 & 6) and one is motivated to be challenged and to engage in something meaningful (Items 8, 9, & 10).

Results on aggregate of all items. When the composite measure of all ten boredom items (α = .79) was entered into a one-way ANOVA with Emotion as independent variable, differences between the conditions were highly significant, $F(3, 100) = 23.44, p < .001, \eta^2 = .41$. As reflected in Table 3, participants’ scores were higher in the boredom condition ($M = 3.90, SD = 0.44$) compared to the sadness condition ($M = 2.88, SD = 0.74$), $t(100) = 6.30, p < .001, d = 1.26$, compared to the anger condition ($M = 2.82, SD = 0.63$), $t(100) = 6.65, p < .001, d = 1.33$, and compared to the frustration condition ($M = 2.77, SD = 0.70$), $t(100) = 7.22, p < .001, d = 1.44$. The sadness, anger, and frustration conditions did not differ significantly from each other (all $p$s > .53). Overall, these results indicate that the ten items relating to boredom’s experiential content were useful to differentiate between the experience of boredom compared to experiences of sadness, anger, and frustration.

Results on aggregate of most distinct items. Of all the proposed ten distinctive items, seven satisfied the two conservative distinctiveness criteria specified above and
these seven covered all five experiential content domains (see Table 1, items indicated with *). We performed a similar analysis on the basis of our conservative criterion for distinctiveness. That is, we used the items where participants in the boredom condition gave significantly higher ratings to the experiential content in question than in any other emotion condition. We averaged these seven items into a single score of boredom’s distinctive experiential content ($\alpha = .80$). A one-way ANOVA with the aggregated experiential content as dependent variable, and Emotion as independent variable revealed significant differences, $F(3, 100) = 27.85, p < .001, \eta^2 = .46$. As can be observed in Table 3, in the boredom condition participants scored higher ($M = 4.14, SD = 0.45$) compared to the sadness condition ($M = 2.86, SD = 0.86$), $t(100) = 6.64, p < .001, d = 1.33$, compared to the anger condition ($M = 2.65, SD = 0.72$), $t(100) = 7.76, p < .001, d = 1.55$, and compared to the frustration condition ($M = 2.75, SD = 0.71$), $t(100) = 7.54, p < .001, d = 1.51$. The sadness, anger, and frustration conditions, however, did not differ significantly from each other (all $ps > .28$). The findings regarding the seven aggregated boredom items thus reveal that boredom is clearly distinct from experiences such as sadness, anger, and frustration.

**Boredom situations.** In order to understand what kind of boredom experiences were recalled, we also examined the situational characteristics of the participants’ descriptions. A first coder went through the boredom descriptions ($N = 28$) and generated situational categories. A second and third coder then independently categorized each description. There was a high consensus across the two coders (89%) and full agreement for the remainder was reached after the coders exchanged their views on the reasons for their categorizations. The most frequently described boredom experience related to educational settings ($N = 10$; e.g., attending a boring lecture), followed by situations in which participants were alone ($N = 5$; e.g., friends were away for the weekend), boredom experienced during leisure activities ($N = 3$; e.g., nothing of
interest on TV), and being bored at work (N = 2; e.g., working in a shop with few customers). The remaining participants (N = 8) focused on boredom’s affective character without providing details of the situational characteristics of their experiences.

Participants’ ratings of the distinct experiential content items were quite high across all of these different categories (all Ms ≥ 3.95), when compared to the sadness, anger, and frustration conditions (all Ms ≤ 2.86). Moreover, the rated distinct experiential content did not differ much between the categories: Participants’ ratings of the aggregated distinct boredom items were highest for work boredom (M = 4.43, SD = 0.20, N = 2), followed by feeling bored while being alone, (M = 4.26, SD = 0.34, N = 5), boredom in educational settings (M = 4.10, SD = 0.56, N = 10), and leisure boredom (M = 3.95, SD = 0.08, N = 3). For participants who gave descriptions that did not offer information regarding the specific situation the scores fell more or less in the middle (M = 4.10, SD = 0.50, N = 8). Overall, boredom situation thus ranged from educational, work, and leisure settings, to being alone; each of these situation seemed to involve relatively similar scores on boredom’s distinct experiential content.

Discussion

The experiential content of boredom was investigated with respect to feelings, thoughts, action tendencies, actions, and emotivational goals that differentiate boredom from sadness, anger, and frustration. Using a conservative criterion regarding the distinctiveness of experienced content of one emotion to other emotions, we found that seven items clearly captured a distinct experiential content of boredom; boredom involves feeling restless and unchallenged at the same time while thinking that the situation serves no purpose. One wants to engage in behavior that is different and purposeful, and this is accompanied by turning to activities that are considered to be more meaningful. These findings lend support to our general hypothesis that bored people feel unchallenged, that they think the situation and their activities are
meaningless, motivating them to engage in more meaningful activities. Importantly, this particular configuration of experiences distinguishes boredom from the other negative affective states such as sadness, anger, and frustration: It not merely confirms that these elements are part of the state boredom experience, but it suggests that they are not merely reflecting co-occurring experiences of other negative affective states.

Study 1 was a first step in the identification of the experiential content of boredom. Participants recalled boredom experiences and experiences of other emotions and then reported their characteristics. Boredom situations in the current study involved educational, work, leisure settings, and situations in which one was alone. In additional studies, we tested whether the identified distinct experiential content of boredom is consistent with individual differences in boredom proneness (Study 2) and with the actual state experiences when people are bored, by measuring (Study 3) and manipulating (Study 4) state boredom.

**Study 2: Experiential Content and Boredom Proneness**

Is vulnerability for being bored associated with the typical configuration of boredom experiences? That is, do people who are prone to being bored more frequently experience what we identified as the distinct set of boredom experiences? We designed Study 2 in order to examine the validity of boredom’s identified experiential content (Study 1) by relating it to the boredom proneness scale (Farmer & Sundberg, 1986) – a measure of people’s disposition for being bored. The boredom proneness scale is regarded as a valid and reliable boredom proneness measure (Farmer & Sundberg, 1986) and has been shown to predict a wide variety of phenomena (e.g., anger, aggression, impulsiveness, sensation seeking, lack of and search for meaning in life; see Dahlen, et al., 2004; Rupp & Vodanovich, 1997; Van Tilburg & Igou, 2011a). On one level, a correlation between boredom proneness and boredom’s distinct experiential content would mean that people prone to be bored more often have the distinct
experience of boredom than people who are less prone to be bored. On another level, a correlation would suggest that the identified experiential content partially represents the boredom construct. Importantly, the existence of a correlation would confirm that the previously identified distinct experiential content of boredom is not merely restricted to recalled boring situation but also relates to another boredom indicator, in this case individual differences in the vulnerability of experiencing boredom.

Method

Participants and design. Thirty-five undergraduate students participated in a correlational paper & pencil study (21 females, 14 males; $M_{age} = 21.60$, $SD = 2.34$) in exchange for a candy bar.

Procedure and materials. Students were asked to participate in a short study on emotions and attitudes. Upon agreement, we provided participants with the informed consent form before asking them for demographic information (age, sex). To make the level of measurement similar to that of the boredom proneness scale, the seven distinct experiential content items (Study 1) were revised so that they would measure frequent experiences. Specifically, the items read “I often feel restless and unchallenged at the same time.”, “I often think that the situation serves no important purpose.”, “I often feel like doing something completely different.”, “I often feel like doing something more purposeful.”, “I often turn to a more meaningful activity.”, “I often want to do something more meaningful.”, and “I often want to be challenged.” Participants rated to what extent each of the items were descriptive of them on a five-point interval scale ranging from 1 (never) to 5 (most of the time). None of the items included an explicit reference to boredom. Next, participants worked on the boredom proneness scale (Farmer & Sundberg, 1986), which includes items such as “Most of the time I just sit around doing nothing”; “I am good at waiting patiently” (reversed), measured with five-
point interval scale ranging from 1 (never) to 5 (most of the time). Afterwards, participants were thanked, rewarded, and debriefed.

Results and Discussion

Participants’ scores on the experiential content items were averaged ($\alpha = .79$) as were their scores on the boredom proneness scale after recoding reversed items ($\alpha = .82$). Next, we calculated the correlation between the two measures. As predicted, we obtained a significant positive correlation between the experiential content and the boredom proneness scale ($r = .48, p < .01$), indicating that the distinct experiential content identified in Study 1 overlaps with boredom proneness. In other words, the correlation between the measured boredom proneness – a dispositional measure of boredom – and boredom’s distinct experiential content signals that people who become more easily bored more often have the distinct boredom experiences. Importantly, these results lend credibility to the assumption that this experiential content represents the boredom construct. This study used a dispositional indicator of boredom; in Study 3 we examined whether the distinct boredom experiences overlap with state boredom.

Study 3: Experiential Content and Measured State Boredom

The previous studies focused on recalled and dispositional boredom but did not directly show what bored people feel in the moment when they are bored. Do people who are momentarily bored have more of the distinct boredom experiences than people who are momentarily less bored? Based on the identified distinct experiential content of boredom in Study 1 we designed Study 3 to examine the validity of boredom’s identified experiential content by testing whether it relates to actual state experiences of boredom assessed at the end of a two-hour psychology tutorial. A correlation between the experiential content of boredom with the momentary experience of boredom would again validate the identified experiential content. In addition, the existence of a correlation would again confirm that the previously identified distinct experiential
content of boredom is not merely restricted to recalled boring situations or dispositional boredom but also translates well to state experiences as a boredom indicator.

Method

Participants and design. Seventy-seven undergraduate students participated in a correlational paper & pencil study (54 females, 23 males; $M_{age} = 19.31$, $SD = 3.86$) in exchange for partial course credit.

Procedure and materials. Students engaged in this research as part of their course requirement and this study took place at the end of a first year two-hour psychology tutorial in which the topic of entering data and labeling variables was covered, which posed an ideal setting for examining state boredom. The data collection was situated in class rooms of between 20 and 30 students who all worked quietly and individually on the materials. After giving informed consent, participants were asked for demographic information. The seven items of our boredom experience measure (Study 1) were revised in such a way that they accounted for state experiences. Specifically, the items read “When you focus on your feelings at the moment, how much does the feeling make you feel restless and unchallenged at the same time?”, “When you focus on your feelings at the moment, how much does the feeling make you think that the situation served no important purpose?”, “When you focus on your feelings at the moment, how much does the feeling make you feel like doing something completely different?”, “When you focus on your feelings at the moment, how much does the feeling make you turn to a more meaningful activity?”, “When you focus on your feelings at the moment, how much does the feeling make you feel like doing something more purposeful?”, “When you focus on your feelings at the moment, how much does the feeling make you want to do something more purposeful?”, and “When you focus on your feelings at the moment, how much does the feeling make you want to be challenged?” Participants rated the extent to which they agreed to each of the items on five-point interval scales.
ranging from 1 (not at all) to 5 (very much). In addition, participants indicated the extent to which they experienced state boredom by rating the item “When you focus on your feelings in this moment, how much do you feel bored?” on a five-point interval scale ranging from 1 (not at all) to 5 (very much). Afterwards, participants were thanked, rewarded, and debriefed.

Results and Discussion

Participants’ scores on the experiential content items were averaged (α = .78) and correlated with the state boredom ratings. A significant positive correlation was obtained (r = .58, p < .001), indicating that the more the participants felt bored at the time of the study, the more they agreed with the experiential content that was found to be most distinctive for boredom. Importantly, this study confirms that the more people experience boredom in a particular moment the more their experiences are in line with the distinct experiential content reported in Study 1. In Study 4, we tested whether the experiential content of boredom would also be observed when boredom was manipulated and whether the causal appraisal of the situation as ‘boring’ would explain the effects of our manipulation on the distinct boredom experiences.

Study 4: Experiential Content, Manipulated State Boredom, and the Interpretation of the Situation

Study 4 was designed to examine two questions. We first of all tested whether state boredom causes the distinct boredom experience. Extending the investigation of the distinct experiential content of boredom from yet another perspective would further confirm that the distinct experiential content represents typical boredom experiences. To understand an emotion requires an understanding of people’s interpretation of the self and the situation (e.g., Frijda, 1988, 2007; Lazarus & Smith, 1988; Schachter & Singer, 1962; Scherer, 1997). The experiential content of boredom reflects for the most part the self-related descriptive appraisal of this emotion. That is, how people experience the
situation and how they plan to respond. However, appraisals are also important to understand how the interpretation of the situation causes the emotion, that is, the causal appraisals or appraisals as antecedents of emotions (e.g., Frijda, 2007; Scherer, 1997). For state boredom, the situation is of central importance. We therefore also tested whether the interpretation of the situation is accountable for the resulting feelings, thoughts, goals, and actions.

Method

We adopted the notion that the distinct boredom experiences (feelings, thoughts, emotivational goals, action tendencies, actions) may in part result from people’s interpretation of the situation as boring. Consequently, we tested whether the effects of the boredom manipulation on boredom experiences would be mediated by the extent to which the situation was perceived as boring. We also controlled for the states of frustration, anger, and sadness to test whether the boredom manipulation had a distinct effect on state boredom compared to these other emotional states.

Participants and design. Thirty-six undergraduate students participated in a short study and were assigned to either one of the conditions (Boredom: High vs. Low) of a between factorial design in exchange for a candy bar. One participant was excluded based on the outlier criteria proposed by Tabachnick and Fidell (2007), resulting in an effective sample size of thirty-five participants (22 females, 13 males; $M_{\text{age}} = 21.66$, $SD = 3.58$).

Procedure and materials. Students were asked to participate in exchange for a candy bar. Upon agreement, participants gave their informed consent and reported demographic information. Boredom was manipulated by having participants engage in the repetitive task of copying either only 2 (Low Boredom) versus 10 (High Boredom) references taken from an October 2009 Wikipedia entry on concrete (e.g., “Kosmatka, S.H.; Panarese, W.C. (1988). Design and control of concrete mixtures. Skokie, IL.”).
After copying either 2 or 10 references, participants were asked for their causal appraisal of the situation “To what extent did the task you just completed make you feel bored?” on a seven-point interval scale ranging from 1 (not at all) to 7 (very much). Afterwards, they worked on the seven distinct boredom experience items (Study 1). Specifically, the items read “To what extent do you feel restless and unchallenged at the same time?”, “To what extent do you think that the situation served no important purpose?”, “To what extent do you feel like doing something completely different?”, “To what extent do you feel like doing something more purposeful?”, “To what extent do you wish to turn to a more meaningful activity?”, “To what extent do you want to do something more meaningful?”, and “To what extent do you want to be challenged?” Participants rated their agreement on five-point interval scales ranging from 1 (not at all) to 5 (very much). Next, we had participants rate the extent to which they felt bored, sad, angry, and frustrated on four similar five-point interval scales in order to measure their emotional states using four items (“To what extent do you feel bored?”, “To what extent do you feel sad?”, “To what extent do you feel angry?”, “To what extent do you feel frustrated?”). Afterwards, participants were thanked, rewarded, and debriefed.

Results

Interpretation of the Situation. The item measuring whether participants perceived the reference copying task as boring was subjected as a dependent variable to a one-way ANOVA with the boredom manipulation as independent variable. As reflected in Table 4, this analysis indicated that in the high boredom condition participants thought more strongly that the task made them feel bored ($M = 4.83$, $SD = 1.95$) than participants in the low boredom condition ($M = 3.00$, $SD = 2.00$), $F(1, 33) = 7.55$, $p = .01$, $\eta^2 = .19$.

Distinctive emotional state. The items measuring state boredom, sadness, frustration, and anger were each entered as dependent variable into four one-way
ANOVAs with the boredom manipulation as independent variable. As reflected in Table 4, these analyses revealed that participants felt significantly more bored after copying 10 references ($M = 3.61$, $SD = 1.42$) versus 2 references ($M = 2.65$, $SD = 1.17$), $F(1, 33) = 4.78$, $p = .04$, $\eta^2 = .13$, indicating the effectiveness of our manipulation. No reliable differences, however, were found on feeling sad ($M = 2.00$, $SD = 1.28$ vs. $M = 1.44$, $SD = 0.71$), $F(1, 33) = 2.59$, $p = .12$, $\eta^2 = .07$, feeling angry ($F < 1$), or feeling frustrated ($F < 1$).

Specific boredom experiences. The participants’ scores on the experiential content items were averaged ($\alpha = .87$) and were subjected as dependent variable to a one-way ANOVA with the boredom manipulation as independent variable. As reflected in Table 4, this analysis indicated that in the high boredom condition participants agreed more to the experiential content items ($M = 4.05$, $SD = 0.90$) than in the low boredom condition ($M = 3.30$, $SD = 0.87$), $F(1, 33) = 6.21$, $p = .02$, $\eta^2 = .16$.

Interpretation of situation as mediator. The interpretation of causality to the situation (i.e., the task) has implications for the specific boredom experiences, that is, how people feel, what they think, and what they plan to do. Therefore, the appraisal of the task as being boring was expected to mediate the effect of boredom (high vs. low) on the experiential content scores. An analysis of statistical mediation was performed following the procedure of Preacher and Hayes (2008). As reflected in Figure 1a, this analysis indicated that participants scored higher on boredom’s experiential content in the high than in the low boredom condition, $B = 0.75$, $S_e = 0.30$, $\beta = 0.40$, $t(32) = 2.49$, $p = .02$, and the causal appraisal was more pronounced in the high versus the low boredom condition, $B = 1.83$, $S_e = 0.67$, $\beta = 0.43$, $t(32) = 2.75$, $p = .01$. Moreover, the non-mediated effect of the boredom manipulation on the experiential content was not significant ($t < 1$) while the appraisal was significantly associated with the experiential content, $B = 0.26$, $\beta = 0.60$, $S_e = 0.06$, $t(32) = 4.14$, $p < .001$. The mediated effect,
estimated using 5,000 accelerated and bias-corrected bootstraps as recommended by Hayes (2009), confirmed the existence of a significantly mediated path, $0.11 < B_{95} < 1.04$, $S_e = 0.23$, $0.26 < \beta < 0.56$, total $R^2 = 0.45$.

The finding that our manipulation only significantly affected state boredom and not the other negative emotional states suggests that the effect of our manipulation on the experiential content of boredom was unlikely to be associated with sadness, anger, frustration, but it was likely to be associated with boredom. To provide further evidence for this conclusion, we re-estimated the second mediation model after including sadness, anger, and frustration as covariates consistent with the methodological recommendations of Preacher and Hayes (2008). As reflected in Figure 1b, this analysis indicated that participants scored higher on boredom’s experiential content in the high than in the low boredom condition, $B = 0.76$, $S_e = 0.28$, $\beta = 0.30$, $t(29) = 1.97$, $p = .06$, and the causal appraisal was more pronounced in the high versus the low boredom condition, $B = 1.47$, $S_e = 0.67$, $\beta = 0.35$, $t(29) = 2.23$, $p = .03$. Moreover, the non-mediated effect of the boredom manipulation on the experiential content was not significant ($t < 1$) while the appraisal was significantly associated with the experiential content, $B = 0.18$, $S_e = 0.07$, $\beta = 0.40$, $t(29) = 2.49$, $p = .02$. The mediated effect, estimated using 5,000 accelerated and bias-corrected bootstraps as recommended by Hayes (2009), confirmed the existence of a significantly mediated path, $0.00 < B_{95} < 0.74$, $S_e = 0.23$, $0.00 < \beta < 0.41$, total $R^2 = 0.54$. These results further confirm our assumption that the experiential content of boredom experiences is distinct from other emotional states.

**Discussion**

This study had multiple purposes. Most importantly, we demonstrated that *state* boredom, manipulated via a task, resulted in the distinct pattern of experiences for boredom. In addition, no other emotional state (i.e., sadness, anger, or frustration) was
affected by our manipulation and these other emotional states did not have a distinct association with the experiential content, thus indicating – consistent with the results of Study 1 – that boredom can be distinguished from other emotional states in terms of its experiential content. Finally, a mediation analysis further revealed that the increase in boredom’s experiential content could be fully explained by the causal attribution of the affective state. That is, the specific situation (task) was associated with a pattern of feelings, thoughts, action tendencies, actions, and emotivational goals that emerges when participants were bored and these experiences were distinct from other emotions.

The identified experiential content of boredom was again validated – this time by experimental induction, and it was distinct from sadness, anger, and frustration. This study adopted a broad perspective on the experience of boredom as it addressed an antecedent (here the interpretation of the situation), boredom’s experience, and the subsequent goals that boredom promotes. Effectively, this study further confirmed that boredom’s distinctiveness involves feeling restless and unchallenged at the same time, while thinking that the situation serves no purpose. One wants to engage in behavior that is different and purposeful, and this is accompanied by turning to activities that are considered to be meaningful.

**General Discussion**

Our research was designed to investigate what makes the boredom experience distinct from other affective states. Based on the literature of consequences of boredom, we adopted a meaning-regulation framework to conceptualize the typical boredom experience and how it is distinct from other emotional experiences. We tested our framework of boredom in a series of four studies. In Study 1, participants were asked to recall and describe a past experience of boredom, sadness, anger, or frustration and subsequently rated items that potentially captured the experiential content. We followed the procedure by Roseman and colleagues (1994) to identify boredom’s unique
emotional signature across a variety of experiential content domains. Importantly, by comparing participants’ ratings of the feelings, thoughts, action tendencies, actions, and emotivational goals across the emotion conditions, we were able to assess the experiential configuration that distinguished boredom from other negative emotions. The results indicate that boredom has a unique experiential content: Boredom – experienced in educational settings, work settings, leisure contexts, and while being alone – involves feeling restless and unchallenged at the same time, while thinking that the situation serves no purpose. One wants to engage in behavior that is different and purposeful, and this is accompanied by turning to activities that are considered to be meaningful.

The particular experiential content of boredom was validated in Study 2 by correlating it to one of the most often used boredom measures in research: the boredom proneness scale (Farmer & Sundberg, 1986). That is, a positive correlation was found between boredom’s phenomenology and individual difference in boredom proneness, confirming that the identified distinct experiential content is indeed related to the construct of boredom. In Study 3, we correlated the identified experiential content to the state experiences of boredom assessed at the end of a psychology tutorial on date entry and giving labels to variables. These results indicate that the distinct experiential content of boredom is also related to actual state boredom experiences, thus further lending construct validity to the identified distinct boredom experience.

In Study 4, we manipulated state boredom directly by means of a repetitive task. As expected, greater boredom caused more of the typical, distinct experiences of boredom. Furthermore, the effect of the boredom induction on the distinct experiential content was mediated by the causal appraisal, in our case, the attribution of the affective state to the features of the situation. Note that the measured state boredom was associated with the typical experiential content whereas states of sadness, anger, and
frustration could not explain this relationship, confirming once more that the boredom experience differs from that of other negative emotions. Adding to the research on what bored people look like (Wallbott, 1998), and to research that indicates that boredom is a negative experience in which people make appraisals of low effort and little attention with bored people feeling that they have little on their minds and that they have a clear idea of what is going (Smith & Ellsworth, 1985), we thus provide evidence that boredom has a distinct experiential content, reflected in people’s feelings, thoughts, action tendencies, actions and emotivational goals.

Essentially, our results highlight that the affective experience of boredom informs a person about the situation and the self (e.g., for an affect-as-information model see Schwarz & Clore, 2007; Clore & Bar-Anan 2007). Specifically, the experience informs a person that the present activity or situation lacks challenge and meaning, and that some effort needs to be taken in order to resolve this issue. In this sense, the affective state of boredom informs oneself about the situation that one is in. Importantly, this self-regulatory function of boredom is distinct in that it is not shared by affective experiences such as frustration, anger, or sadness, and the experience of boredom thus serves a relatively unique purpose.

One benefit arising from a better understanding what it means to feel bored and how this differs from other negative emotions is the opportunity to distinguish between the effects that stem from each of these emotions. Many factors have been suggested to be either correlates or components of boredom, but it remains largely unclear whether they are really part of the experienced boredom rather than co-occurring affective states. Our research provides a first step in identifying unique components of boredom and adds to the understanding of consequences of boredom. Boredom research suggests that people who are easily bored may behave anti-socially by being aggressive (e.g., Rupp & Vodanovich, 1997). Dahlen and colleagues (2004), suggest that a significant part of the
association of boredom proneness with aggression could not be explained by sensation seeking only. Our findings make it possible to develop tests of how boredom is experienced and how it affects behavior, with the potential of identifying factors that contribute to the boredom-aggression link.

The presented research provides a basis for a deeper understanding of the boredom experience and its potential consequences. Sure, it is not surprising that people don’t want to engage in uninteresting activities, but our research goes far beyond this notion. Our research shows that boredom is associated with a particular experience on multiple levels, and our studies indicated that these experiences are most typical for boredom compared to sadness, anger, and frustration. Most importantly, the boredom experience must not be understood as one particular experience (e.g., feeling restless, experiencing a lack of challenge), it is the configuration of experiences that makes it unique. Bored people feel restless and unchallenged, they think that the situation serves no purpose, they want to engage in behavior that is different and purposeful, and thus turn to activities that are considered to be meaningful. It is this affective signature that characterizes boredom and distinguishes it from other affective states, and understanding boredom helps in predicting its behavioral consequences. We wish to preclude the misunderstanding that challenge and meaning are the only two components that make boredom different from other affective states. Based on our reading of the literature on boredom experiences, we focus on ‘meaning’ and ‘challenge’ as the two concepts that are highly distinctive for boredom, and our hypothesis was confirmed across a series of four studies.

We started our investigation based on the procedure by Roseman and colleagues (1994; see also Frijda, 1986; Frijda et al., 1989; Van de Ven et al., 2009). This research investigated central experiential contents of emotions, that is, experiential contents that are relevant across emotions in general. As in Roseman and colleagues’ research, some
overlap between these elements of experiential content is inherent in this approach. For example, ‘action tendencies’ must – to some degree – be related to other elements such as ‘actions’. Essentially, our results indicate that the meaning-regulation process of boredom is not only reflected in the motivational components of boredom (e.g., action tendencies, emotivational goals), but also manifest in the thoughts and feelings associated with boredom.

Based on the configuration of experiences that are distinctive for boredom, we further conclude that boredom is strongly associated with self-regulatory processes and especially two self-regulation goals seem to be promoted according to our findings. Boredom seems to make people strive for challenge or stimulation (e.g., Dahlen et al., 2004), and boredom promotes the maintenance and restoration of the perception that one’s activities are meaningful (e.g., Heine et al., 2006; see also Sansone et al., 1992). This is important and of great interest, as past research indicates that the need to re-establishment a sense of meaning has inspired an impressive amount of empirical work that identified many consequences of meaning-threats on people’s attitudes and behaviors (for overviews, see Greenberg et al., 2004; Heine et al., 2006). This opens a wide array of directions in which the investigation of boredom can be pursued. On the broader level, our findings illuminate the prevalent motivational character of boredom. Consistent with classic boredom research by Leary and colleagues (1986), boredom is not merely a state of passivity, disinterest, or lack of arousal, but involves a strong self-regulatory component that is represented across the experiential domains of boredom.

Limitations and Future Directions

In order to preclude misunderstandings, we would like to add that the experience of boredom is likely to include more than a lack of challenge and meaning and subsequent responses to increase them again. Boredom may also promote other self-regulatory processes, for example to remain interested and increase fun (e.g., Nett,
Goetz, & Hall, 2011; Sansone, 1992 Smith et al., 2009), and boredom may include physiological, cognitive, affective, and behavioral elements (e.g., Vodanovich, 2003) that we did not investigate. Based on earlier research, we sought to identify whether the particular boredom elements of meaning and challenge are central to the boredom experience and differentiate boredom from other affective states.

Future research may identify additional experiential contents of boredom and responses that we did not investigate. However, our research contributes to the understanding of the distinct experiential content of boredom and its consequences. Specifically, our meaning-regulation approach was confirmed and may thus open up pathways to explain and test the effects of boredom experiences on behavior. For example, to conceptualize boredom as an unpleasant emotion that suggests meaninglessness of one’s activities, a lack of challenge, and the goal to re-establish a sense of meaningfulness may help to explain seemingly contradictory consequences of boredom. More specifically, although the literature suggests an association of boredom with aggression (Rupp & Vodanovich, 1997), we found in our own research that boredom promotes pro-social behavior (Van Tilburg & Igou, 2011a). Even though such findings may seem inconsistent at first sight, understanding what bored people experience can help to explain these findings. Specifically, needs for meaningfulness of one’s activities and challenge may be served differently in particular situations. Aggression in one situation and pro-social behavior in another situation may provide adequate and functional means to re-establish a sense of meaningfulness or challenge. Although some research findings seem contradictory, they are likely to be rooted in the same experiential content of boredom.

It would be interesting if future research examined the extent to which challenge and meaning are distinctive for boredom depending on contextual influences. For example, research by Acee and colleagues (2010) suggests that in some cases, also
overly challenging activities can be associated with boredom. These authors further suggest that one of the reasons why not only a lack of challenge but also certain over-challenging activities may be associated with boredom is because “both kinds of boredom register an absence of meaning” (p. 25). Possibly, boredom may to some extent also be experienced when only one of the presently identified distinctive elements is present (e.g., lack of meaning), and whether this is the case may be dependent on the particular context of the boring situation or activity (see also Pekrun et al., 2010).

Conclusions

Boredom is a chore, an experience that relates to central human needs for meaningful and challenging activities. Understanding people’s behaviors in part as attempts to cope with or to overcome boredom may help to reduce the occurrence of boredom or at least to reduce its potentially negative consequences, and to increase its potentially positive consequences. Therefore, our research on boredom is likely to contribute to this overarching goal.
CHAPTER 2 – ON BOREDOM

References


CHAPTER 2 – ON BOREDOM


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Footnotes

1 Following Roseman (1994), the term ‘emotivational goal’ refers to motivational components that are specifically related to emotions.

2 For the items that did not work in their original research (e.g., actions of frustration) we developed items in order to have an equal amount of items for each emotion. Details can be provided on request.

3 Across all studies, no main or interaction effects of gender and age were observed besides a single very small significant association between age and the boredom item “want to do something meaningful” of Study 1. Specifically, a 2-way ANCOVA with this item as dependent variable and the emotion condition and gender as independent variables revealed that participants’ endorsement of the item increased with age. $F(1, 94) = 3.86, p = .05, \eta^2 = .04 (B = .08, S_e = .04)$. This association, however, did not interfere with the effect of interest.

4 Even though the experiential content of sadness, anger, and frustration were not of primary interest for the current investigation, the original findings by Roseman and colleagues (1994) were largely replicated. Details can be provided on request. Interestingly, the sadness item ‘…feel very tired’ was found to be significantly more endorsed for boredom compared to each of the other emotions (all $p$s < .05). Although our investigation focused primarily on challenge and meaning, this item may be considered for inclusion in future research.

5 No adjustments to the $\alpha$-level were made because we made explicit predictions for each of the comparisons. Specifically, we predicted that participants would give higher ratings for the ten boredom items in the boredom condition relative to participants in the sadness, anger, or frustration conditions. Similarly, Roseman and colleagues (1994), whose approach served as basis for our Study 1, explain why adjustments would not be adequate (p. 208). However, to rule out any concerns in this regard, we checked the data
after making Bonferroni corrections to the \( \alpha \)-level. First of all, we correcting for the total amount of 12 ANOVAs by adopting an \( \alpha \)-level of .004. Importantly, the critical ANOVAs associated with the seven distinct items, the ANOVA on the entire boredom content, and also the ANOVA on the composite of the distinct boredom content remained significant (all \( p \leq .002 \)). We also examined the specific comparisons after adopting an \( \alpha \)-level of .008, correcting for the 6 specific comparisons after each of the ANOVA’s. Importantly, people’s scores in the boredom condition were still significantly higher compared to those in the other conditions for each of the seven distinct boredom items, the entire boredom content, and also the composite of boredom’s distinct content (all \( p \leq .007 \)).

\(^6\) It should be noted that the identified category frequencies were too small for testing the statistical reliability of these differences.

\(^7\) The sample size was relatively small compared to the other studies. Please note, however, that the study contained only two conditions and that the effect sizes of the predicted significant main effects are considerable (.13 \( \leq \) all \( \eta^2 \)’s \( \leq \) .19). Moreover, sample sizes such as those in Study 4 are quite common in social psychology experiments that are part of a series of studies (e.g., Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007, p. 57).

\(^8\) Correlation analyses indicated that state boredom was significantly correlated with anger, \( r = .47, p < .01 \), and frustration, \( r = .64, p < .001 \), not with sadness, \( r = .19, p = .27 \). Moreover, anger significantly correlated with sadness, \( r = .61, p < .001 \), and frustration, \( r = .76 \), and also sadness and frustration were significantly correlated, \( r = .47, p < .01 \). These correlations are consistent with the general notice that the four experiences share elements and these correlations further subscribe to the importance of identifying how these emotional states can be distinguished from each other, as done in
our research. Importantly, our manipulation affected boredom in particular and did not significantly alter levels of sadness, anger, and frustration.

9 The mediation analysis procedure by Preacher and Hayes (2008) does not include β-coefficients in the output. We have therefore estimated the Beta’s by performing the same mediation analyses after standardizing the involved variables.
### Table 1

*Experiential Content Items of Boredom (Study 1).*

<table>
<thead>
<tr>
<th>Item</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feelings 1</td>
<td>…feel restless and unchallenged at the same time?*</td>
</tr>
<tr>
<td>Feelings 2</td>
<td>…feel that you did not know what to do with your time?</td>
</tr>
<tr>
<td>Thoughts 3</td>
<td>…unable to stop thinking about things you would rather do?</td>
</tr>
<tr>
<td>Thoughts 4</td>
<td>…think that the situation served no important purpose?*</td>
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<tr>
<td>Action Tendencies 5</td>
<td>…feel like doing something completely different?*</td>
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<tr>
<td>Action Tendencies 6</td>
<td>…feel like doing something purposeful?*</td>
</tr>
<tr>
<td>Actions 7</td>
<td>…change to more exiting behaviors?</td>
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<tr>
<td>Actions 8</td>
<td>…turn to a more meaningful activity?*</td>
</tr>
<tr>
<td>Emotional Goals 9</td>
<td>…want to do something more meaningful?*</td>
</tr>
<tr>
<td>Emotional Goals 10</td>
<td>…want to be challenged?*</td>
</tr>
</tbody>
</table>

*Note:* * Item was distinctive for boredom relative to sadness, anger, and frustration.
Table 2

Results for the Experiential Content Items of Boredom (Study 1).

<table>
<thead>
<tr>
<th>Boredom Items</th>
<th>Boredom</th>
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<th></th>
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<th>Sadness</th>
<th></th>
<th></th>
<th></th>
<th>Anger</th>
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<td>Item 1*</td>
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<td>Item 9*</td>
<td>4.43 a</td>
<td>0.74</td>
<td>28</td>
<td></td>
<td>3.50 b</td>
<td>1.41</td>
<td>24</td>
<td></td>
<td>2.22 c</td>
<td>1.24</td>
<td>24</td>
<td></td>
<td>2.96 b</td>
<td>1.14</td>
<td>28</td>
</tr>
<tr>
<td>Item 10*</td>
<td>4.22 a</td>
<td>1.05</td>
<td>27</td>
<td></td>
<td>3.00 bc</td>
<td>1.53</td>
<td>24</td>
<td></td>
<td>3.13 b</td>
<td>1.30</td>
<td>24</td>
<td></td>
<td>2.41 c</td>
<td>1.28</td>
<td>27</td>
</tr>
</tbody>
</table>

Note: Higher scores indicate agreement. Means in a single row with different subscript significantly differ at the .05 level in contrast analyses. * Item was distinctive for boredom relative to sadness, anger, and frustration according to our conservative criterion.
Table 3

Results for the Aggregated Experiential Content of Boredom (Study 1).

<table>
<thead>
<tr>
<th>Experiential Content Measure</th>
<th>Boredom</th>
<th>Sadness</th>
<th>Anger</th>
<th>Frustration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td>M</td>
</tr>
<tr>
<td>Entire Experiential Content</td>
<td>3.99_a</td>
<td>0.44</td>
<td>28</td>
<td>2.88_b</td>
</tr>
<tr>
<td>Distinctive Experiential Content</td>
<td>4.14_a</td>
<td>0.45</td>
<td>28</td>
<td>2.86_b</td>
</tr>
</tbody>
</table>

*Note:* Higher scores indicate agreement. Means in a single row with different subscript significantly differ at the .05 level in contrast analyses.
### Table 4

The Effects Copying References on Experiences (Study 4).

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Boredom Manipulation</th>
<th>Low Boredom</th>
<th>High Boredom</th>
<th>F</th>
<th>p</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$n$</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Task Boringness</td>
<td></td>
<td>3.00</td>
<td>2.00</td>
<td>17</td>
<td>4.83</td>
<td>1.95</td>
</tr>
<tr>
<td>Boredom’s Experiential Content</td>
<td></td>
<td>3.30</td>
<td>0.87</td>
<td>17</td>
<td>4.05</td>
<td>0.90</td>
</tr>
<tr>
<td>State Boredom</td>
<td></td>
<td>2.65</td>
<td>1.17</td>
<td>17</td>
<td>3.61</td>
<td>1.42</td>
</tr>
<tr>
<td>State Sadness</td>
<td></td>
<td>2.00</td>
<td>1.28</td>
<td>17</td>
<td>1.44</td>
<td>0.71</td>
</tr>
<tr>
<td>State Anger</td>
<td></td>
<td>1.82</td>
<td>1.07</td>
<td>17</td>
<td>2.00</td>
<td>1.33</td>
</tr>
<tr>
<td>State Frustration</td>
<td></td>
<td>2.24</td>
<td>1.44</td>
<td>17</td>
<td>2.72</td>
<td>1.67</td>
</tr>
</tbody>
</table>

*Note: Higher scores indicate higher perceived boringness of the task, greater endorsement of boredom’s experiential content, and more boredom, sadness, anger, and frustration.*
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Figure 1a: Mediation by Causal Appraisal on the Experiential Content (Study 4).

Figure 1a: The mediation model on manipulated boredom, task boringness, and the experiential content of boredom, as analyzed in Study 4. 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. ** $p < .01$, *** $p < .001$. Indirect effect of the boredom manipulation on experiential content: $0.11 < B_{95} < 1.04$, $S_e = 0.23$.

Figure 1b: Mediation by Causal Appraisal on the Experiential Content, While Controlling for Sadness, Frustration, and anger. (Study 4).

Figure 1b: The mediation model on manipulated boredom, task boringness, and the, experiential content of boredom while controlling for sadness, anger, and frustration as analyzed in Study 4. 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, * $p < .05$. Indirect effect of the boredom manipulation on experiential content: $0.00 < B_{95} < 0.74$, $S_e = 0.19$. 
CHAPTER 3

Meaning as Motivation:

An Expectancy-Value Approach to the Meaningfulness of Behavior
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Meaning as Motivation:
An Expectancy-Value Approach to the Meaningfulness of Behavior

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Abstract

Our research examines people’s concept of ‘meaningful behavior’ from a motivational perspective. Specifically, we argue that people consider two elements when inferring the meaningfulness of behavior: the value of the goals that the behavior relates to and the degree to which the behavior is useful for the achievement of these goals. A series of five studies demonstrates that behavior is then considered to be ‘meaningful’ if it is highly instrumental for a highly valued goal. Our expectancy-value approach offers a straightforward yet crucial perspective of how people perceive meaningfulness in their everyday life behaviors and empirically goes beyond vague and more or less implicit assumption on the perceptions of meaning. The far-reaching implications of these findings for research on meaningfulness, meaning-regulation, and past conceptualizations of meaning in epistemic terms are discussed.

Keywords: meaning, value, instrumentality, self-regulation
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Meaning as Motivation:

An Expectancy-Value Approach to the Meaningfulness of Behavior

Psychological research has recognized humans’ important need to perceive life as meaningful (e.g., Greenberg, Koole, & Pyszczynski, 2004; Heine, Proulx, & Vohs, 2006). Meaningfulness has been found to correlate with factors such as life satisfaction, happiness, and work enjoyment (e.g., Bonebright, Clay, & Ankenmann, 2000; Chamberlain & Zika, 1988; Debats, Van der Lubbe, & Wezeman, 1993), and a lack of meaningfulness is associated with, for example, decreased well-being, depression, anxiety, and substance abuse (Adler & Fagley, 2005; Debats et al., 1993; Harlow, Newcomb, & Bentler, 1986; see also Steger, Frazier, Oishi, & Kaler, 2006). Not surprisingly, an increased amount of psychological research has turned to the investigation of how people derive and maintain a sense of meaningfulness. In social psychology, most research has focused on the many consequences of threats to perceptions of meaning (e.g., existential threats such as death, uncertainty, and ostracism; Case & Williams, 2004; Greenberg et al., 2004; Van den Bos, 2001; Williams, 2002) and its subsequent consequences on meaning maintenance strategies such as fairness behavior (Van den Bos, 2001), nostalgia (Sedikides, Wildschut, & Baden, 2004), or worldview defense (e.g., Greenberg, Solomon, & Pyszczynski, 1997; see also Heine, et al., 2006).

Notwithstanding the central role that the concept of meaning plays within the abovementioned research, definitions of this concept are often vague, sometimes implicit, and often inconsistent. Meaning has been associated with terms such as purposefulness, personal growth (e.g., Ryff & Singer, 1998), self-transcendence (e.g., Seligman, 2002), or authentic goal pursuit (Kasser & Sheldon, 2004). Heine and colleagues (2006) suggests that ’meaning is relation’, which is described as “what connects things to other things in expected ways” (pp. 90-91). Similarly, Baumeister
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(1992) roughly identifies meaning as a “shared mental representation of possible relationships among things, events, and relationships” (p. 15), and other researchers emphasize that meaning is closely related to coherence and need for closure (e.g., Dechesne & Kruglanski, 2004; Kenyon, 2000; see also Baumeister, 1992, p.17). We believe that these definitions have their merits, but that a more specific conceptualization is required in order to increase the predictability of people’s evaluations of behavior, especially when it relates to meaning-regulation processes. Moreover, a conceptualization of meaning should preferably be tested empirically to ensure that this complex concept bears relevance to the use of the term in everyday life. In essence, we suggest that ‘meaning’ functions largely as a motivating variable.

Our approach builds on the assumption that expectancy-value processes underlie meaning maintenance and re-establishment, and it aims to clarify how people’s understanding of meaningful behavior fits into the broader assumptions of these meaning-regulation processes. In this respect, we are shifting from the abstract concept of meaning as ‘relation’ to the question of why meaningfulness and meaningful behavior is important for people in everyday life from a motivational perspective. That is, ‘meaning’ can be approached as an epistemic quality (e.g., understanding how elements in the world are related to each other; maintaining a consistent understanding of the world) as advocated in a set of psychological approaches to meaning (e.g., Baumeister, 1992; Heine et al., 2006), but we approach ‘meaning’ with respect to evaluations of behaviors (e.g., identifying what behaviors are meaningful). Specifically, we propose that when people evaluate the meaningfulness of behavior, then they understand ‘meaning’ as an evaluative judgment pertaining to their motivated goal pursuit. To illustrate, consider the behavior of charity support. An epistemic approach to meaning would pose the question “What is charity support?” whereas the expectancy-value perspective we propose would raise the question “Is charity support meaningful?”
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Expectancy (i.e., instrumentality of behavior) x value (i.e., goal value) conceptualizations have a long historical tradition in self-regulation research (e.g., Atkinson, 1957; for an overview see Heckhausen & Heckhausen 2008). In essence, we argue that the expectancy-value rationale underlies people’s inference of the degree to which their behavior is meaningful.

Let’s consider the example of running around in circles. When is this behavior regarded as meaningful? Possibly, running around in circles may be considered meaningful by people who wish to participate in a marathon because it helps them to get closer to their goal of being able to participate in the marathon. That is, the meaningful behavior is associated with a valued goal and the behavior is instrumental for the pursuit if this goal.

The consideration of instrumental goal pursuit as an essential facet of achieving meaningfulness is consistent with past research that relates meaningfulness to purposefulness, personal growth, and self-transcendence (e.g., Ryff & Singer, 1998; Seligman, 2002). Along the same lines, Kasser and Sheldon (2004) emphasize that people seek to fulfill their “potentials and possibilities” (p. 480). Similarly, acts that are intrinsically motivated – for example because they serve a goal that people endorse – may provide the actor with a sense of autonomy (Ryan & Deci, 2004) and can promote personal growth (Deci & Ryan, 2000).

Building further on this goal-based perspective of meaning, we argue that people’s perceptions of meaningful behavior are essentially those behaviors that make highly desirable goals attainable. Our approach is consistent with the notion that the expected value of one’s behavior influences people’s motivation to engage in activities (for overviews see Heckhausen & Heckhausen, 2008; Feather, 1982; see also Kruglanski et al., 2002). That is, people are committed to a goal when it is high in value and attainable. To this expectancy-value notion we add a people’s perspective on
People regard behavior as meaningful if it is associated with a valued goal if it is an instrumental means for the pursuit of the valued goal, that is, whether or not the valued goal is attainable.

In sum, perceived meaningfulness is a subjective assessment of behavior that is not derived from either instrumentality or associated goal value alone, but rather critically depends on their interaction; the concept ‘perceived meaningfulness of behavior’ essentially reflects an appraisal of motivated behavior where both associated goal value and instrumentality of behavior are high. Importantly, perceived meaningfulness of behavior is a unique psychological reality that regulates people’s motivation and behavior. In essence, ‘meaningfulness’ is not a vague, useless concept, but a subjective perception that is central in people’s understanding of their behavior, and it can be clearly conceptualized and assessed. We wish to stress that we refer to meaningfulness of behavior as a subjective entity, not an objective descriptor of behavior. For example, the behavior of ‘watching cartoons on television’ will usually have some objective purpose (e.g., having a laugh), yet this does not imply that the behavior is also subjectively meaningful. This in a valuable observation as the subjective interpretation of behavior is likely to be the primary predictive variable in understanding people’s actions as opposed to an externally defined objective property of the behavior. Thus, the term ‘meaningful’ does not just simply refer to anything with an objective purpose. Rather, meaningfulness refers to a subjective evaluation derived from a particular configuration of perceived instrumentality and goal value of behavior.

It is important to note that epistemic approaches to meaning and our expectancy-value perspective are not opposing theories, but rather provide additive perspectives. Whereas epistemic approaches aid the understanding of how people manage to perceive the world in a relatively stable and coherent fashion, the expectancy-value approach
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offers particular key insights into the perceptions that underlie goal-directed behaviors and evaluations.

**Why is This Research Important?**

Recent research suggests that the motivated maintenance of meaningfulness affects people on multiple levels. Further integrating the concept of meaningfulness of behavior into the realms of motivation and self-regulation subscribes to the critical role that meaning-regulation plays in the attainment of life satisfaction, happiness, work enjoyment, well-being, and the reduction of depression, anxiety, substance abuse, and many more (e.g., Adler & Fagley, 2005; Bonebright et al., 2000; Chamberlain & Zika, 1988; Debats et al., 1993; Harlow et al., 1986; see also Steger et al, 2006; Heine et al, 2006). Psychological conceptualizations of meaningfulness have often been linked *implicitly* to self-regulation, but an investigation of how their basic elements can be integrated is restricted to surprisingly few *explicit* articulations.

We suggest that the perceived meaningfulness of behavior may explain how and why people respond to particular experiences. Generally speaking, if people have the impression that their behavior is meaningless (e.g., boring task), then they are likely to engage in behavior that seems to re-establish a sense of meaningfulness (e.g., pro-social behavior; Van Tilburg & Igou, 2011b). That is, perceived meaningfulness of one’s own actions constitutes a central variable in the meaning-regulation process. In order to make predictions about people’s behavior, one thus has to recognize what people perceive as meaningless or meaningful. Put differently, an approach to perceived meaningfulness based on people’s perceptions increases the precision in psychological research on meaning-regulation. It also provides a basis for interventions, that is, offering people behavioral alternatives that contribute to a sense of meaningfulness.

As we argue that meaning-regulation assumptions can be described in basic self-regulatory terms (e.g., means and their instrumentality, goals and their values) and
specific assumptions about self-regulatory processes (e.g., expectancy-value assumptions), meaning-regulation processes become concrete and useful for mediation tests. We focus on the meaningfulness of behavior rather than more general meaning-structures or perceptions such as cultural worldviews (Solomon, Greenberg, & Pyszczynski, 2004), ideologies (Jost, Fitzsimons, & Kay, 2004), or meaning in life (Steger et al, 2006). And rather than defining what specific behaviors are meaningful, we adopted a self-regulatory framework that is relatively integrative with respect to individual and contextual variations. Whether or not a specific goal is important (e.g., valuable) depends largely on the given individual or contextual characteristics. A specific type of behavior might be meaningful for some people but not for others, and it may be meaningful in one particular situation but not in another – a crucial observation for an appropriate understanding of when and how meaningfulness can be derived from specific behaviors (see also Steger et al., 2006, p. 81). Note also that our approach is in harmony with self-determination approaches to goal directed behavior (Deci & Ryan, 1980; 1985; 2000) as we stress that the process of pursuing a valued goal itself (e.g., donating to charity to develop a cure for cancer) can promote meaningfulness, even if the actual goal (e.g., developing a cure for cancer) is not necessarily fulfilled.

In sum, assessing the empirical link between people’s perception of meaningfulness and the instrumental pursuit of valued goals is of high scientific merit and has implications for everyday life. Perceptions of meaningfulness reflect an appraisal of specific situations where both instrumentality and associated goal value are high, and the mere presence of either one of them (e.g., low instrumentality in the pursuit of a highly valued goal) is not sufficient to make people consider behavior as meaningful. This last observation – that meaning is reflecting an interaction between goal value and instrumentality – is crucial; we do not equate meaning with goal value, and we do not equate it with instrumentality of behavior. Rather, meaningfulness
reflects a distinct subjective entity that results from the interplay of perceived instrumentality and goal value. That is, we argue that people perceive behavior as ‘meaningful’ when the associated goal value and the instrumentality for achieving this goal are high. Put differently, ‘meaningfulness’ is derived from both goal value and instrumentality, but it reflects a distinct psychological quality that cannot be solely explained by either goal value or instrumentality alone. It is this unique subjective perception of meaningfulness, which allows for predictions of behavior that people commit to when they attempt to maintain or re-establish a sense of meaningfulness. Moreover, the expectancy-value approach provides a very straightforward prediction that can clearly be falsified and can be experimentally manipulated by influencing its underlying components of instrumentality and goal value. In a series of studies, we tested whether people do infer the meaningfulness of behavior based on the proposed expectancy-value principle; that is, based on the instrumentality with which the behavior would serve a goal and whether the goal would be valuable. Throughout the studies, we examined perceptions of meaningfulness by focusing on variations in instrumentality and goal value across different behaviors, as well as variations of these within the same particular behavior.

**Study 1: People’s Evaluation of Meaninglessness of Their Behavior**

We first examined whether the evaluation of meaninglessness of behavior varies as a function of the interplay between value of goals and the instrumentality of the means for approaching these goals. We predicted that participants would evaluate their own recalled behavior as least meaningless when it was associated with a highly valuable goal and when it was instrumental for the achievement of this goal.

**Method**

**Participants and design.** Seventy-eight undergraduate students from Tilburg University \( M_{\text{age}} = 20.55, SD = 3.23; \) 36 men, 42 women) were randomly assigned to the
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conditions of a 2 (Goal Value: High vs. Low) x 2 (Instrumentality: High vs. Low) factorial design in exchange for course credit.

**Procedure and materials.** Participants were seated in cubicles and were given the paper & pencil materials. After participants gave informed consent forms and reported demographic information, we manipulated goal value by having participants write down a goal that was very valuable to them (High Goal Value condition) versus a goal that had little value to them (Low Goal Value condition). As manipulation check participants rated the extent to which they valued this goal, using a seven-point scale from 1 (not at all) to 7 (very much). Next, we manipulated instrumentality of behavior by instructing participants to describe an activity that helped them to pursue the aforementioned goal (High Instrumentality condition) or that did not help them to pursue the goal (Low Instrumentality condition). Afterwards, we assessed the perceived meaninglessness of behavior with items that have been used in prior research (Van Tilburg & Igou, 2011a; 2011b); participants rated the extent to which they considered their recalled behavior as meaningless, senseless, purposeless, insignificant, and worthless, on seven-point scales from 1 (not at all) to 7 (very much). Afterwards, participants were thanked and debriefed.

**Results and Discussion**

**Goal value.** A t-test with the manipulated goal value as independent and the rated goal value as dependent variable confirmed that the High Goal Value condition yielded higher goal value ratings ($M = 6.38, SD = 0.75$) compared to the Low Goal Value condition ($M = 1.90, SD = 1.12$), $t(76) = 20.82, p < .001, d = 4.78$.

**Meaninglessness.** We computed the average scores on meaninglessness ($\alpha = .91$) and entered it into a two-way ANOVA with Goal Value and Instrumentality as independent variables. High goal value led to lower levels of perceived meaninglessness of behavior than low goal value ($M = 2.28, SD = 1.41$ vs. $M = 2.97, SD = 1.34$), $F(1, 74)$
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5.85, \( p = .02, \eta^2 = .07 \). Also, high instrumentality of behavior led to lower meaninglessness ratings than low instrumentality \((M = 2.35, SD = 1.41 \text{ vs. } M = 2.95, SD = 1.37)\), \( F(1, 74) = 5.50, p = .02, \eta^2 = .07 \).

Importantly, these main effects were qualified by the predicted interaction of Goal Value and Instrumentality, \( F(1, 74) = 13.60, p < .001, \eta^2 = .16 \). As reflected in Figure 1, participants rated their behavior as less meaningless when the behavior was highly instrumental for the pursuit of a highly valued goal \((M = 1.40, SD = .57)\), compared to when instrumentality was low, \((M = 3.11, SD = 1.47)\), \( t(74) = 4.30, p < .001, d = 1.00 \), compared to when the behavior was highly instrumental for a less valued goal, \((M = 3.13, SD = 1.41)\), \( t(74) = 4.50, p < .001, d = 1.05 \), and compared to behavior that was low in instrumentality for a less valued goal \((M = 2.75, SD = 1.25)\), \( t(74) = 3.21, p < .01, d = 0.75 \). We did not observe any significant differences in perceived meaninglessness of behavior whenever the goal had low value and/or the instrumentality of behavior was low (all \( ts < 1 \)). Overall, these results demonstrate that people perceive behavior to be least meaningless (i.e., most meaningful) when it serves a valued goal; but when it does not serve a valued goal or when it serves a less valuable goal, people are likely to perceive behavior as relatively meaningless (i.e., less meaningful).

Study 2a: Meaningfulness Conditional on Means-Goals Relationships

Study 2a was also designed to test the effects of goal value and instrumentality on perceived meaningfulness of behavior. However, in contrast to Study 1, this study tested the effect of means-goals variations on perceived meaningfulness of the same behavior (i.e., keeping the behavior constant). The assumption of this study was that meaningfulness is not inherent to a specific type of behavior. Instead, meaningfulness of behavior is defined in relation to goals that people value and the perceived
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instrumentality of the behavior for these goals. Therefore, different effects can be expected for one and the same behavior when means-goals relations change.

Participants evaluated the target behavior (‘running along the forest’s training course for a very long time’) either when the goal was highly valuable or had little value. We also varied whether this behavior was instrumental for the goal or not instrumental for the goal. We predicted that the same behavior would be considered more meaningful when it was instrumental for the pursuit of a valued goal compared to when the goal did not have much value and/or when the behavior was not instrumental for the goal pursuit.

Method

Participants and design. Forty-four undergraduate students at the University of Limerick were randomly assigned to the conditions of a 2 (Goal Value: High vs. Low) x 2 (Instrumentality: High vs. Low) x 2 (Order of Goal Value: High/Low vs. Low/High) mixed design with Goal Value as within-participants factor and with Instrumentality and Order of Goal Value as between-subjects factors. One participant was an extreme outlier and excluded from the analysis (see Tabachnick & Fidell, 2007), resulting in an effective sample size of forty-three participants ($M_{age} = 23.53, SD = 3.68; 25$ men, 19 women).

Procedure and materials. Participants in the campus library gave their informed consent and reported demographic information. Participants were then instructed to read two scenarios. We asked them to imagine that they woke up early, went to the forest, and started running along the forest’s training course for a very long time. We manipulated goal value and instrumentality by altering the content of this scenario. Specifically, we stated in the High Instrumentality condition that they performed this behavior to qualify for the New York City Marathon, whereas in the Low Instrumentality condition we stated that they tried to qualify for the New York
City Chess Competition. In the High Goal Value condition we added that this goal was of great value to them, whereas in the Low Goal Value condition we added that this goal was of very little value to them.

We asked participants to respond to several questions. First, we checked for the effectiveness of our manipulation by asking participants to indicate to what extent they would consider the described goal as valuable and to what extent the behavior was helpful for pursuing this goal, on scales from 1 (not at all) to 7 (very much). Next, participants rated to what extent they would consider the behavior as meaningful and meaningless on seven-point scales ranging from 1 (not at all) to 7 (very much). Afterwards, participants were thanked and debriefed.

**Results and Discussion**

Preliminary analysis did not reveal any reliable main effects of the Order of Goal Value nor any interactions with the other independent variables (on manipulation checks all $p$s > .59; all $p$s > .14 for value and instrumentality, respectively; on meaningfulness of the behavior all $p$s > .52). This variable was therefore excluded from subsequent analyses.

**Manipulation checks.** The scenarios’ instrumentality ratings were highly correlated ($r = .69, p < .001$) and therefore averaged. A t-test with instrumentality as independent variable and the composite instrumentality ratings as dependent variable confirmed that participants in the High Instrumentality condition regarded the behavior as more instrumental ($M = 5.48, SD = 1.34$) than participants in the Low Instrumentality condition ($M = 2.89, SD = 1.49$), $t(41) = 5.98, p < .001, d = 1.71$. A paired sample t-test between participants’ goal value ratings of the High Goal Value condition and participants’ value ratings the Low Goal Value condition similarly revealed that participants thought that the highly valued goal was more valuable ($M = 4.77, SD = 2.02$) than the little valued goal ($M = 3.40, SD = 2.17$), $t(42) = 5.41, p < .001, d = 1.67$. 

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Meaningfulness of behavior. Scores on the rated meaningfulness and meaninglessness items were significantly correlated for the High and Low Goal Value scenarios ($r = -.80, p < .001$ and $r = -.86, p < .001$, respectively) and therefore combined to two composite measures (after recoding the meaninglessness items). A one-way ANOVA for repeated measures with instrumentality as between-subjects factor, goal value as within-participants factor, and the composite measures of meaningfulness as repeated measure variable was performed. We observe a marginally significant influence of the instrumentality manipulation, $F(1, 41) = 3.70, p = .06, \eta^2 = .08$.

Specifically, participants in the High Instrumentality condition regarded the behavior as more meaningful ($M = 4.89, SD = 0.99$) compared to participants in the Low Instrumentality condition ($M = 4.02, SD = 1.79$). In addition, participants indicated a significantly higher level of meaningfulness of the behavior when it was associated with high goal value ($M = 4.77, SD = 1.97$) than when it was associated with low goal value ($M = 4.08, SD = 1.96$), $F(1, 41) = 4.89, p = .03, \eta^2 = .11$.

Importantly, the main effects were qualified by the predicted interaction of Goal Value and Instrumentality, $F(1, 41) = 10.36, p < .01, \eta^2 = .20$. As reflected in Figure 2, perceived meaningfulness was highest when the behavior was associated with a goal that was high in value and when the behavior was high in instrumentality ($M = 5.83, SD = 1.25$), compared to when the instrumentality of behavior was low for a low value goal ($M = 4.20, SD = 2.05$), $t(41) = 3.09, p < .01, d = 0.97$, compared to when the behavior was highly instrumental for a low value goal ($M = 3.95, SD = 1.90$), $t(19) = 3.31, p < .01, d = 1.52$, and compared to when the behavior was low in instrumentality for a high value goal ($M = 3.85, SD = 2.04$), $t(41) = 3.76, p < .001, d = 1.17$. No significant differences were observed between the three conditions where either instrumentality was low, goal value was low, or both were low (all $p$s $> .31$). These results demonstrate
that, as predicted, the same specific behavior was only considered relatively meaningful when it was regarded as instrumental for a highly valued goal.

**Study 2b: Relationship to a Superordinate Goal as Source of Meaningfulness**

Studies 1 and 2a demonstrate that meaningfulness of behavior is derived from its instrumentality to serve a valued goal. Similar to Study 2a, we tested perceived meaningfulness for the same behavior as a function of goal value and instrumentality. However, in contrast to Study 2a we presented a superordinate goal from which the goal value would be derived (e.g., Kruglanski et al., 2002). We predicted that the target behavior would be perceived as more meaningful when it was associated with a superordinate goal and instrumental for the goal pursuit compared to when either the superordinate goal was absent or when instrumentality was low.

**Method**

**Participants and design.** Ninety-five people in Limerick’s city centre were randomly assigned to the conditions of a 2 (Goal Value: High vs. Low) x 2 (Instrumentality: High vs. Low) factorial design in exchange for a beverage at a local café. Two participants were excluded from the analysis after being identified as extreme outliers (see Tabachnick & Fidell, 2007), resulting in an effective sample size of ninety-three participants ($M_{age} = 27.29, SD = 12.71; 36$ men, 59 women).

**Procedure and materials.** Participants were seated at a café and were given the materials. Participants gave their informed consent, reported demographic information, and we instructed participants to read a scenario about Frank and his behavior (similar to Study 2a). In the High Instrumentality condition it was stated that Frank performed this behavior in order to qualify for the New York City Marathon, whereas in the Low Instrumentality condition we stated that Frank tried to qualify for the New York City Chess Competition. In the High Goal Value condition we added that Frank wanted to qualify for the event as he would perceive the achievement of this goal as an “act of his
victory over cancer.” We assumed that the superordinate goal (symbolic victory of cancer) would indirectly lend value to the focal goal (qualifying for a competition in New York City). In the Low Goal Value condition we did not refer to a superordinate goal.

We checked for the effectiveness of our manipulation by asking participants to indicate to what extent Frank’s goal was valuable and to what extent Frank’s behavior was helpful for pursuing this goal, each on scales from 1 (not at all) to 7 (very much). Next, participants rated to what extent they considered the behavior as meaningful and meaningless, each on a seven-point scale ranging from 1 (not at all) to 7 (very much). Afterwards, participants were thanked and debriefed.

Results and Discussion

Manipulation checks. A t-test with instrumentality as independent variable and instrumentality ratings as dependent variable confirmed that participants in the High Instrumentality condition regarded Frank’s behavior as more instrumental ($M = 3.87, SD = 1.95$) than participants in the Low Instrumentality condition ($M = 2.85, SD = 1.98$), $t(89) = 2.48, p = .02, d = 0.53$. A t-test with the goal value as independent variable and goal value ratings as dependent variable revealed that participants in the High Goal Value condition regarded Frank’s goal as more valuable ($M = 5.51, SD = 1.56$) than participants in the Low Goal Value condition ($M = 4.19, SD = 1.98$), $t(88) = 3.54, p < .001, d = 0.75$.

Meaningfulness of behavior. Scores on the rated meaningfulness and meaninglessness items ($r = -.66, p < .001$) were combined into a composite measure (after recoding the meaninglessness item). A two-way ANOVA with Goal Value and Instrumentality as independent variables, and the composite measure of meaningfulness revealed no reliable main effect of the goal value manipulation, $F(1, 87) = 2.09, p = .15, \eta^2 = .02$, but we did observe a main effect for Instrumentality, $F(1, 87) = 5.11, p = .03$, $d = 0.53$. 

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η² = .06. Specifically, participants indicated a higher level of meaningfulness of the behavior when it was instrumental \((M = 4.77, SD = 1.80)\) than when it was not instrumental \((M = 3.91, SD = 1.81)\).

Importantly, the main effect was qualified by the predicted interaction between Goal Value and Instrumentality, \(F(1, 87) = 4.06, p = .05, \eta^2 = .05\). As reflected in Figure 3, perceived meaningfulness was highest when the behavior was associated with a highly valued goal and when the behavior was high in instrumentality \((M = 5.39, SD = 1.65)\), compared to when instrumentality was low for the high value goal \((M = 3.81, SD = 1.82)\), \(t(87) = 3.07, p < .01, d = 0.66\), compared to when the behavior was high in instrumentality for a relatively low value goal \((M = 4.11, SD = 1.74)\), \(t(87) = 2.43, p = .02, d = 0.52\), and compared to when both the Goal Value and Instrumentality were relatively low \((M = 4.02, SD = 1.82)\), \(t(87) = 2.61, p = .01, d = 0.56\). No significant differences were observed between the three conditions where either instrumentality was low or the goal value was relatively low (all \(ps > .56\)). This means that, as predicted, the same specific behavior was only considered relatively meaningful when it was regarded as instrumental for a highly valued goal.

Behavior was perceived as especially meaningful when it was instrumental to pursue a valued goal. However, in contrast to Study 2a, we did not ask participants to view the presented goal (qualifying for a competition) as valuable or not, instead, more implicitly, we either associated this goal with a superordinate goal or we did not associate it with a superordinate goal. As predicted, participants derived the meaningfulness of behavior from its functional relationship with the value-laden superordinate goal.

**Study 3: Meaningfulness Influences Perceptions of Instrumentality, Fun Does Not**

In the studies reported above, we had participants evaluate the meaningfulness of behavior after we manipulated goal value and instrumentality of this behavior. In the
current study, we first asked participants to think of behavior that was meaningful or meaningless to them before they rated this behavior’s instrumentality for achieving a highly valued goal.

We also wanted to demonstrate that people are capable of distinguishing between meaningful behavior and otherwise ‘positive’ behavior. That is, people do not simply label behavior as meaningful when it is somehow positive. For this purpose, we asked people to not only evaluate behaviors in terms of meaningfulness but also in terms of ‘fun’, a particular positive aspect of behavior, yet conceptually distinct from meaningfulness. Although ‘fun’ behavior and ‘meaningful’ behavior may sometimes overlap (e.g., when conducting research), we pose that people are capable of differentiating between the two. Moreover, fun is neither sufficient nor necessary for meaningfulness (e.g., when attending a funeral). Fun behavior can exist without serving a highly valued goal, and meaningfulness can be perceived even if behavior is not much fun. As a consequence, people regard meaningful (vs. meaningless) behavior as more instrumental for the pursuit of valued goals, even if the behavior is not fun. More generally, if ratings of behaviors’ meaningfulness and fun are distinct, then it is safe to conclude that ‘meaningfulness’ is not simply used as a generic positive evaluation of behavior.

To control experimentally for ‘positivity’ we compared participants’ evaluations of behavior that was meaningful and not fun, to behavior that was meaningless and not fun. Participants were expected to perceive meaningful and not fun behavior as higher in instrumentality for a valued goal compared to meaningless and not fun behavior. Furthermore, we also included an item measuring participants’ ratings of ‘fun’ and a condition in which participants simply recalled ‘fun behavior’ (i.e., not referring to meaningfulness or meaninglessness). We predicted that the difference in instrumentality
for achieving a valued goal would remain unaffected when statistically controlling for the fun associated with the behavior.

Method

Participants and design. Eighty-one people in Limerick’s city centre (\(M_{\text{age}} = 30\); 52 women) were randomly assigned to either one of the five conditions (Recalled Behavior: Meaningful vs. Meaningless vs. Meaningful & Not Fun vs. Meaningless & Not Fun vs. Fun) of a between-subjects design in exchange for a beverage at a café.

Procedure and materials. Participants were seated at the café and were given the materials. After participants gave informed consent and reporting demographic information, we asked participants to recall a behavior instance that they considered to be meaningful, meaningless, fun, meaningful and not fun, or meaningless and not fun. Next, they rated the extent to which they considered the behavior as meaningful, meaningless, and fun, each on a seven-point scales from 1 (not at all) to 7 (very much). We then asked participants to indicate whether the behavior was helpful for achieving a valued goal on a scale from 1 (not at all) to 7 (very much). Afterwards, participants were thanked and debriefed.

Results

Manipulation check. We created a composite measure of the meaningfulness scores and the reversed meaninglessness scores \((r = .70, p < .001)\) and entered it as dependent variable into a one-way ANOVA with the Recalled Behavior condition as independent variable. This analysis yielded a significant effect, \(F(4, 88) = 47.90, p < .001, \eta^2 = .69\). As reflected in Figure 4a, participants rated behavior that was meaningful as higher in meaningfulness \((M = 6.41, SD = .84)\), compared to when we asked for meaningless behavior, \((M = 2.32, SD = 1.25)\), \(t(88) = 9.00, p < .001, d = 1.92\), compared to when we asked for meaningless behavior that was not fun \((M = 1.97, SD = 1.26)\), \(t(88) = 9.78, p < .001, d = 2.09\), and compared to when we asked for fun behavior \((M =
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5.48, SD = 1.70), t(88) = 2.17, p = .03, d = 0.45. No difference was observed between ratings regarding meaningful behavior and meaningful behavior that was not fun (M = 6.14, SD = 1.17; t < 1). The difference between meaningless behavior and fun behavior was significant, t(88) = 7.50, p < .001, d = 1.60.

In addition, participants who described behavior that was meaningful and not fun perceived it to be more meaningful than when we asked for meaningless behavior, t(88) = 8.99, p < .001, d = 1.92, and than when we asked for behavior that was meaningless and not fun, t(88) = 9.82, p < .001, d = 2.09, and marginally significant when we asked for fun behavior, t(88) = 1.68, p = .10, d = 0.36. Participants who described fun behavior gave significantly higher meaningfulness ratings compared to when we asked for behavior that was meaningless and not fun, t(88) = 8.34, p < .001, d = 1.78. Participants’ ratings of behavior that was meaningless versus meaningless and not fun did not differ (t < 1).

**Instrumentality for achieving a highly valued goal.** We entered the instrumentality ratings as dependent variable into a one-way ANOVA with the Recalled Behavior condition as independent variable. This analysis yielded a significant effect, F(4, 87) = 16.93, p < .001, η² = .44. As reflected in Figure 4b, participants regarded meaningful behavior as more instrumental for achieving a valued goal (M = 5.40, SD = 2.35), compared to meaningless behavior, (M = 1.88, SD = 1.90), t(87) = 5.19, p < .001, d = 1.11, and compared to behavior that was meaningless and not fun (M = 1.65, SD = 1.62), t(87) = 5.53, p < .001, d = 1.19, but neither compared to ratings of fun behavior (M = 4.82, SD = 1.89) nor behavior that was meaningful but not fun (M = 5.29, SD = 1.82; both ts < 1).

When behavior was meaningful and not fun, we observed higher scores in instrumentality for a highly valued goal compared to when behavior was meaningless, t(87) = 5.45, p < .001, d = 1.17, and compared to when behavior was meaningless and
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not fun, \( t(87) = 5.83, p < .001, d = 1.25 \), but we did not observe a difference to ratings of fun behavior \((t < 1)\). Finally, ratings of fun behavior were higher compared to when behavior was meaningless, \( t(87) = 4.75, p < .001, d = 1.02 \), and when it was meaningless and not fun, \( t(87) = 5.13, p < .001, d = 1.10 \), but ratings did not differ when behavior was meaningless in comparison to behavior that was meaningless and not fun \((t < 1)\).

**Fun.** Next, we entered the fun ratings as dependent variable into a one-way ANOVA with the Recalled Behavior condition as independent variable. This analysis yielded a significant effect, \( F(4, 87) = 19.90, p < .001, \eta^2 = .48 \). As reflected in Figure 4c, when fun behavior was recalled, participants regarded their behavior as significantly more fun \((M = 6.32, SD = 1.09)\), compared to when behavior was meaningful, \((M = 4.07, SD = 2.34)\), \( t(87) = 3.76, p < .001, d = 0.81 \), compared to when behavior was meaningless, \((M = 2.59, SD = 1.91)\), \( t(87) = 6.46, p < .001, d = 1.14 \), compared to when behavior was meaningful and not fun \((M = 2.52, SD = 2.00)\), \( t(87) = 6.96, p < .001, d = 1.49 \), and compared to when behavior was meaningless and not fun, \((M = 1.94, SD = 1.60)\), \( t(87) = 7.58, p < .001, d = 1.63 \).

**Meaningful** behavior was considered to be more fun compared to behavior that was meaningful and not fun condition, \( t(87) = 2.55, p = .01, d = 0.55 \), compared to behavior that was meaningless and not fun, \( t(87) = 3.36, p < .01, d = 0.72 \), and compared to meaningless behavior, \( t(87) = 2.34, p = .02, d = 0.50 \). Participants’ evaluations of behavior that was meaningless, meaningless and not fun, and meaningful and not fun did not differ \( (all t_s < 1) \).

**Positivity versus perceived meaningfulness.** An ANCOVA with the Recalled Behavior as independent variable, instrumentality ratings as dependent variable and fun ratings as covariate revealed that the effect (obtained in the ANOVA) on instrumentality for a valued goal ratings remained significant when we controlled for fun, \( F(4, 85) = \)
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13.70, \( p < .001, \eta^2 = .39 \). Additionally, fun ratings had no significant association with the dependent variable (\( F < 1 \)). A second ANCOVA with meaningfulness as covariate revealed that the effect of the Recalled Behavior condition on instrumentality for a valued goal ratings disappeared, \( F(4, 86) = 1.93, p = .11, \eta^2 = .08 \), and that meaningfulness ratings had a significant association with the dependent variable, \( F(1, 86) = 5.93, p = .02, \eta^2 = .07 \).

**Discussion**

The results again indicate that people interpret meaningful behavior as instrumental for a valued goal. In addition, we examined whether mere ‘positivity’ can account for the results (‘something is fun, therefore it’s meaningful’ or ‘something is meaningful, therefore its fun’). We chose ‘fun behavior’ to represent ‘positivity’ and controlled for it experimentally and statistically. Importantly, by using an experimental and statistical control we could demonstrate that people can separate these concepts such that meaningfulness is perceived even with little fun aspects of behavior. These results strongly suggest that a meaning-regulation framework offers a compelling explanation of perceived meaningfulness.

**Study 4**

Study 4 was designed to test for the robustness of the previously observed effects by using a very different procedure. We focused on common behaviors and used a subtle manipulation of the instrumentality of the behaviors. In two pilot studies we assessed the goal value and the associated instrumentality of four behaviors. This was followed by the main study in which we manipulated the instrumentality of the behaviors with low goal value (watching television and reading comics) and the instrumentality of behaviors with high goal value (traveling and donating money to charity) and assessed the perceived meaningfulness of these behaviors.
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Method

Pilot I: Goal Value of Behaviors. We first assessed the goal value of four behaviors: watching television, traveling the world, reading comics, and donating to Amnesty International. Thirty-one students from the University of Limerick (\(M_{\text{age}} = 21.48, SD = 2.83; 14 \text{ men, 17 women}\)) who received candy as reward indicated for each behavior to which extent it served a valuable goal, using five-point interval scales that ranged from 1 (not at all) to 5 (very much). Afterwards, participants were thanked, debriefed, and rewarded.

A series of paired sample t-tests indicated that the goal value associated with watching television (\(M = 1.74, SD = 0.96\)) was significantly lower than the goal value associated with traveling the world (\(M = 4.19, SD = 0.91\)), \(t(30) = 9.05, p < .001, d = 3.30\), and donating money to Amnesty International (\(M = 3.71, SD = 0.97\)), \(t(30) = 7.14, p < .001, d = 2.61\), but it did not significantly differ from the goal value of reading comics (\(M = 1.84, SD = 0.78; t < 1\)). In addition, the associated goal value of reading comics was of significantly lower than that of traveling the world, \(t(30) = 10.69, p < .001, d = 3.90\), and donating money to Amnesty International, \(t(30) = 8.46, p < .001, d = 3.09\). We also observed that the goal associated with traveling the world was significantly more valued compared to the goal value of donating money, \(t(30) = 2.18, p = .04, d = 0.80\). Overall, the results suggested that participants considered the activities of watching television and reading comics to be associated with less valued goals than traveling the world and donating to Amnesty International.

Pilot Study II: Instrumentality of Behaviors. Twenty-one students from the University of Limerick (\(M_{\text{age}} = 25.67, SD = 9.20; 10 \text{ men, 11 women}\)) participated in the short internet survey (Surveymonkey) and were asked to list a goal that they considered to be served by each behavior: watching television (goals were listed such as “entertainment” and “relaxation”), traveling to see the world (goals were listed such as
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“adventure” and “cultural knowledge”), donating money to Amnesty International (goals were listed such as “helping others” and “alleviating suffering”), and reading comics (goals were listed such as “amusement” and “having a laugh”). Asking participants to list goals was done in order to facilitate the assessment of the behaviors’ instrumentality. Next, participants evaluated the extent to which the behaviors of watching television for one hour (low instrumentality), watching television for two hours (high instrumentality), traveling to see the world for 2 weeks (low instrumentality), traveling to see the world for 2 months (high instrumentality), donating € 50.- to Amnesty International (low instrumentality), donating € 100.- to Amnesty international (high instrumentality), reading one comic album (low instrumentality), and reading two comic albums (high instrumentality) were instrumental for the behaviors’ goals listed earlier on five-point interval scales ranging from 1 (not at all) to 5 (very much). Afterwards, participants were thanked and debriefed.

A series of paired sample t-tests showed that watching television for two hours ($M = 3.10, SD = 1.11$) was considered to be more instrumental for the associated goal than watching one hour ($M = 2.75, SD = 1.16$), $t(19) = 2.67, p = .02, d = 1.23$. Traveling the world was perceived to be more instrumental when it lasted two months ($M = 4.10, SD = 1.00$) compared to two weeks ($M = 2.57, SD = 1.36$), $t(20) = 6.78, p < .001, d = 3.03$. Donating € 100.- to Amnesty International was considered to be more instrumental ($M = 3.80, SD = 0.89$) compared to donating € 50.- ($M = 3.45, SD = 0.95$), $t(19) = 2.33, p = .03, d = 1.07$. And reading two comic albums was considered to be more instrumental ($M = 3.00, SD = 1.30$) than reading one comic album ($M = 2.76, SD = 1.14$), $t(20) = 2.50, p = .02, d = 1.12$. The results of the second pilot study thus showed that small changes to all behaviors influenced the level to which they were perceived as instrumental.
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In sum, the pilot studies identified two behaviors that were associated with a little valued goal and two behaviors associated with a highly valued goals, and we could identify how to manipulate different levels of instrumentality for all four behaviors. As a next step, we tested whether meaningfulness increased as a function of goal value and instrumentality. We predicted that behavior would be considered to be most meaningful when it was both associated with a highly valued goal and instrumental for the achievement of this goal. Importantly, we varied instrumentality of each specific behavior in a between subjects design and did not make any explicit reference to goal value or instrumentality.

**Participants and design.** Ninety students from the University of Limerick were randomly assigned to either one of two between-subjects conditions (Group A vs. Group B). One participant was an extreme outlier and thus excluded from the analysis (see Tabachnick & Fidell, 2007), resulting in an effective sample size of eighty-nine participants ($M_{age} = 20.62, SD = 3.95, 40$ men, $50$ women). Participants in both groups evaluated two behaviors high in instrumentality and two behaviors low in instrumentality, but the groups differed regarding the specific behaviors that were high or low in instrumentality (see procedure and Table 1).

**Materials and procedure.** After participants gave their informed consent and reported demographic information, we asked them to evaluate the extent to which they considered the four behaviors (watching television, traveling the world, reading comics, and donating money to Amnesty International) to be meaningful and meaningless, each on a five-point interval scale that ranged from 1 (*not at all*) to 5 (*very much*).

As reflected in Table 1, half of the participants (Group A) evaluated watching television for one hour (low goal value, low instrumentality), reading two comic albums (high instrumentality, low goal value), travelling to see the world for 2 weeks (low instrumentality, high goal value), and donating €100.- to Amnesty International (high
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instrumentality, high goal value). The other participants (Group B) evaluated watching television for two hours (low goal value, high instrumentality), reading one comic albums (low instrumentality, low goal value), traveling the world for 2 months (high instrumentality, high goal value), and donating €50.- to Amnesty International (low instrumentality, high goal value). In this way, each participant evaluated all four behaviors, but the specific configuration of the behaviors’ goal values and instrumentalities was dependent on the participants’ Group (A vs. B), which was varied between participants. Afterwards, participants were thanked, debriefed, and rewarded.

Results

Averaged recoded meaningfulness scores for each activity (-.67 > rs > -.83, all ps < .001) were entered as dependent variable in a mixed-factorial ANOVA with three factors: Group A vs. B was the between participants variable, goal value was entered as first within-participants factor, and the instrumentality of the different behaviors was entered as second within subjects variable (see also Table 1). An overview of the meaningfulness averages is depicted in Figure 5.

First of all, a significant difference was found between the low and high goal value behaviors, $F(1,87) = 229.86, p < .001, \eta^2 = .73$, indicating that watching television and reading comics were considered to be less meaningful ($M = 2.74, SD = 1.19$ and $M = 2.49, SD = 1.11$, respectively) compared to traveling the world and donating money to Amnesty International ($M = 4.29, SD = 0.94$ and $M = 4.39, SD = 0.76$, respectively). In addition, a significant goal value x instrumentality interaction was observed, $F(1,87) = 4.45, p = .04, \eta^2 = .05$, suggesting that the difference in meaningfulness between watching television and reading comics was unequal to the difference between the meaningfulness of traveling the world and donating money to Amnesty International. Most importantly, however, this two-way interaction was qualified by a significant goal value x instrumentality x group interaction, $F(1,87) = 6.54, p = .01, \eta^2 = .07$. None of
the remaining effects were significant (all $p$s > .12). Given the complexity of this analysis and its subsequent interpretation of the critical three-way interaction, we describe more detailed what this interaction implies in the section below. In addition, Figure 5 graphically displays the results in an easily interpretable format.

Closer inspection of the two meaningfulness ratings of the high goal value behaviors (traveling the world and donating money to Amnesty International) using a mixed-factorial ANOVA with the instrumentality as within participants factor and participants’ group as between-participants factor indicated the critical significant interaction between the group and the behaviors’ instrumentality, $F(1,87) = 9.15, p < .01, \eta^2 = .10$, whereas a similar analysis for the low goal value behaviors (watching television and reading comics) did not reveal an interaction ($F < 1$). In addition, one-way ANOVAs confirmed that traveling the world when instrumentality was high increased meaningfulness ($M = 4.50, SD = 0.67$) compared to when traveling the world was low in instrumentality ($M = 4.07, SD = 1.13$), $F(1,87) = 4.85, p = .03, \eta^2 = .05$, and that donating money to Amnesty International when instrumentality was high resulted in significantly higher levels of meaningfulness ($M = 4.55, SD = 0.66$) compared to when donating was low in instrumentality ($M = 4.24, SD = 0.82$), $F(1,87) = 4.06, p = .05, \eta^2 = .05$. No significant differences were observed between the high and low instrumentality conditions of the low goal value behaviors (watching television or reading comics; $F$s < 1).

**Discussion**

The present study revealed that people ascribe highest levels of meaningfulness to behaviors that are instrumental in serving a highly valued goal. Less meaningfulness is perceived if the instrumentality of behavior in serving high valued goals drops. And relatively little meaningfulness is ascribed to behaviors that do not serve a highly valued goal, independent of whether or not behaviors are instrumental for the associated goal.
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In this study, we investigated relatively common behaviors and varied their instrumentality in a subtle way. In addition, we assessed the behaviors’ associated goal value, instrumentality, and meaningfulness in separate empirical steps, ensuring that participants did not base meaningfulness ratings on goal value and instrumentality. Taken together, our results show that people’s existential perceptions of behavior (i.e. the behaviors’ meaningfulness) are based on the goals that people have and whether or not the available courses of actions serve highly valued goals.

General Discussion

What makes behavior ‘meaningful’? How can ‘meaning’ be understood from a motivational perspective? We adopted an expectancy-value approach to examine people’s perceptions of the extent to which behavior is meaningful. We proposed and found that people view those behaviors as meaningful that are useful for achieving highly valued goals. Behaviors that are unrelated to valued goals or not instrumental for their pursuit are likely to be considered as relatively meaningless. Five studies tested and confirmed the validity of this conceptualization of meaningful versus meaningless behavior. Throughout these studies, the associated goal value and the instrumentality of behaviors were independently manipulated in order to carefully examine whether in particular the interaction between these two expectancy-value components is associated with appraising the behavior as relatively meaningful or meaningless.

In Study 1 we asked people to evaluate behaviors that differed in goal value and instrumentality. Results confirmed that those behaviors, which were both high in instrumentality and associated with a valued goal, were considered least meaningless. In Study 2a we asked all participants to evaluate the same behavior and found that the behavior was considered to be especially meaningful when it was instrumental for achieving a highly valued goal. This interaction effect was conceptually replicated in Study 2b, when the goal value depended on the presence of a superordinate goal. In
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Study 3 we reversed the procedure by first asking participants for meaningful versus meaningless behaviors and then having them evaluate the instrumentality of the behavior and the associated goal value. Additionally, we experimentally controlled for ‘positivity’ by manipulating to what extent the behavior was fun and measured fun as a covariate. Consistent with Study 1, 2a, and 2b, meaningful behavior was considered as instrumental for the pursuit of a highly valued goal and this remained unchanged after both experimentally and statistically controlling for ‘positivity’. Finally, we tested in Study 4 whether four relatively common behaviors were perceived as meaningful depending on their associated goal value and manipulated instrumentality. The results confirmed that behavior was especially considered to be meaningful when the behavior was instrumental in the pursuit of a highly valued goal. Importantly, in this study we assessed goal value, instrumentality, and meaningfulness in separate empirical steps, ruling out the possibility that the presence of any information about goal value of instrumentality might affect subsequent interpretations of meaningfulness. Taken together, the studies provide compelling support for the idea that people consider behavior as meaningful when it is instrumental for the pursuit of a valued goal.

Implications

It is important to be precise about the far reaching implications of this research. To our knowledge, the psychological perception of ‘meaningfulness’ has thus far only been assumed to be associated with a somewhat ‘rational’ consideration of expectancies and values, and we provide empirical support for this critical assumption. To be clear, although we use the term ‘expectancy-value’ as a general characterization of our approach, we certainly subscribe to the notion of subjective perceptions of both the expectancy and the value components (subjective expected utility; e.g., Edwards, 1954). Nevertheless, by considering both components and their relationship when assessing behavior, people seem define meaningfulness in quasi ‘rational’, utilitarian terms.
Important, the meaningfulness of behavior cannot be equated with either goal value or instrumentality, but rather reflects an evaluation of motivated behavior that follows from the interaction between the two. This observation is crucial as it highlights that ‘meaningfulness’ is used by people as a distinct quality that is not simply interchangeable with the terms goal value and instrumentality.

Past research and theorizing has conceptualized ‘meaning’ as the relationship of entities (e.g., ‘meaning is relation’; Heine et al., 2006) or roughly defined meaning as “shared mental representation of possible relationships among things, events, and relationships” (Baumeister, 1992, p.15). Inspired by Kasser and Sheldon’s (2004) notion that meaningfulness can be understood by investigating people’s goals and motivations, we adopted a goal-based approach. We explicitly link people’s inferences of the meaningfulness of behavior to goal value and instrumentality. This novel perspective allows for more precise procedures to induce and measure people’s sense of meaningfulness: Perceived meaningfulness is not simply equal to goal value or instrumentality, our systematic manipulation of both expectancy-value components demonstrate that perceived meaningfulness has its own quality. It is a central psychological experience in people’s everyday life and it is central in people’s language. Further, recent meaning-regulation research suggests that it is this subjective perception that explains much of human behavior in and outside of the lab, especially when it relates to meaning-regulation processes (e.g., Heine et al., 2006). For example, when people experience meaninglessness (e.g., when they are bored), they turn to compensatory actions that re-establish a general sense of meaningfulness (e.g., helping others; Van Tilburg & Igou, 2011b).

Consistent with the notion that meaning perceptions can greatly vary across individuals (Steger et al., 2006), we did not restrict meaningfulness to only a certain type of behavior in our self-regulatory framework. Rather, depending on the individual
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or group performing the behavior and the context in which behavior takes place, perceived meaningfulness of behavior may vary. To give an example, the behavior of bathing in the river Ganges may be considered as much more meaningful by a Hindu than by a Christian. And parents may find it much more meaningful when their child walks for the first time in life rather than when the child is fully grown. In addition, we approached meaningfulness of behavior as something inherently determined by people themselves, which provides straightforward insights into the causes, processes, and effects that accompany people’s experience of meaningful behavior and how they attain a sense of meaning in life. This flexible operationalization facilitates the design of research that investigates the mediating role of the perceived meaningfulness of behaviors.

Past research on meaning-regulation has identified that mortality salience, referring to a situation in which people are reminded of their inevitable death, presents a ‘threat’ to meaning (Greenberg et al., 2004). Why does mortality salience threaten meaning? What element of mortality salience constitutes the meaning threat? Is mortality inconsistent with how we view the world (related to the epistemic meaning concept), or does mortality makes our goals seems insignificant (related to the expectancy-value approach to meaning)? Similarly, what constitutes other existential threats, such as ostracism (Case & Williams, 2004; Williams, 2002), uncertainty (Van den Bos, 2001), and boredom (Van Tilburg & Igou, 2011b)? Do these meaning threats distort our understanding of the world (epistemic approach to meaning), or do they signal an inability to achieve a highly valued goal (expectancy-value approach to meaning)? We empirically confirmed that meaningfulness is an evaluative term stemming from the interaction between goal value and instrumentality. Consequently, a future direction of our research is to test whether meaning threats affect the subjective instrumentality or goal value of people’s actions. Importantly, by specifying ‘meaning’
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as an interaction of self-regulatory terms we provide an important step in pinpointing more clearly what is so threatening about mortality salience, ostracism, uncertainty, and boredom.

We wish to preclude the misunderstanding, however, that the expectancy-value approach adopted here and epistemic approaches to meaning (e.g., Heine et al., 2006) are incompatible. Rather, both approaches may provide useful tools for understanding the meaning concept from different angles and they may together draw an integrated picture of the meaning concept as a whole (see also Baumeister, 1992, pp.15-27).

Our central dependent variables were perceived meaningfulness, reversed perceived meaninglessness, or a combination of both throughout the studies. One could wonder whether these two concepts are truly each other’s opposites. In our own research, meaningfulness and meaninglessness were usually highly negatively correlated (-.66 ≤ rs ≤ -.86). Note also that at the very minimum, past research suggests that there is some validity to treating these concepts as opposites. For example, the presence of meaninglessness subsequently promotes meaningfulness (e.g., Heine et al., 2006) and cues that remind people of life’s meaningless – such as death – promote the defense of meaningful worldviews (e.g., Greenberg et al., 2004). In addition, the assessment of meaning in life is commonly achieved by using a scale that comprises of items that assess meaningfulness and meaninglessness (Steger et al., 2006).

Conclusion

‘Meaning’ and ‘meaningfulness’ are increasingly important concepts in psychological research (e.g., Baumeister, 1992; Greenberg et al., 2004, Heine et al., 2006; Steger et al., 2006). The current research presented a motivational understanding of meaningful behavior by adopting a specific expectancy-value perspective, distinguishing between the value of the goals that the behavior may serve and the instrumentality with which it serves the goals. In essence, our results show that people’s
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perception of the meaningfulness of behavior is applied exclusively for a particular configuration of goal value and instrumentality. The term ‘meaningfulness’ is not just used for any instrumental behavior or any act that is associated with an important goal, but the term is reserved for behavior that satisfied both these criteria.

Importantly, ‘meaningfulness’ is more than just a term that people use, it is a central psychological quality that motivates people’s courses of actions. For people perceptions of meaningfulness are real, it relating to their concrete actions in a particular moment. Further, people avoid or terminate actions that do not seem meaningful in comparison to those actions that seem more meaningful.

Note also that these novel insights into people’s perceptions of meaningfulness bring about increased precision in research: That is, these insights make it possible to generate specific, falsifiable predictions regarding what behaviors people consider to be meaningful and whether people will engage in a specific behavior when they are motivated to regulate meaningfulness.
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References


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### Table 1

*Overview of the Design Employed in the Main Experiment of Study 4.*

<table>
<thead>
<tr>
<th>Within-Subjects Factors</th>
<th>Group A</th>
<th>Group B</th>
</tr>
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<tbody>
<tr>
<td><strong>Goal Value: Low</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instrumentality: Low</td>
<td>Watching Television</td>
<td>Reading Comics</td>
</tr>
<tr>
<td>Instrumentality: High</td>
<td>Reading Comics</td>
<td>Watching Television</td>
</tr>
<tr>
<td><strong>Goal Value: High</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instrumentality: Low</td>
<td>Traveling</td>
<td>Donating Money</td>
</tr>
<tr>
<td>Instrumentality: High</td>
<td>Donating Money</td>
<td>Traveling</td>
</tr>
</tbody>
</table>
Figure 1: The Meaninglessness of Recalled Behaviors (Study 1)

Figure 1: Perceived meaningfulness of participants’ own past behavior as a function of the behavior’s associated goal value and the instrumentality of the behavior for the pursuit of this goal.
Figure 2: The Meaningfulness of Running (Study 2a)

Figure 2: Perceived meaningfulness of ‘running along the forest’s training course for a very long time’ as a function of the behavior’s associated goal value and the instrumentality of the behavior for the pursuit of this goal.
Figure 3: The Meaningfulness of Running (Study 2b)

Figure 3: Perceived meaningfulness of ‘running along the forest’s training course for a very long time’ as a function the instrumentality and the presence of a superordinate goal.
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*Figure 4a:* Perceived meaningfulness of as a function of the type of behavior that was recalled.

*Figure 4b:* Perceived instrumentality for the pursuit of a valued goal as a function of the type of behavior that was recalled.
Figure 4c: Perceived fun as a function of the type of behavior that was recalled.
Figure 5: The Meaningfulness of Four Common Behaviors (Study 4)

![Bar chart showing the perceived meaningfulness of four common behaviors as a function of their goal value and manipulated instrumentality in the pursuit of this goal. Averages labeled ‘A’ reflect scores from participants in Group A; averages labeled ‘B’ reflect scores from participants in Group B. Please refer to the main text for the analysis of the mixed subjects design and the simple effects.]

Figure 5: Perceived meaningfulness of four common behaviors as a function of their goal value and manipulated instrumentality in the pursuit of this goal. Averages labeled ‘A’ reflect scores from participants in Group A; averages labeled ‘B’ reflect scores from participants in Group B. Please refer to the main text for the analysis of the mixed subjects design and the simple effects.
CHAPTER 4

ON BOREDOM AND SOCIAL IDENTITY:

A PRAGMATIC MEANING-REGULATION APPROACH
On Boredom and Social Identity: A Pragmatic Meaning-Regulation Approach

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Abstract

People who feel bored experience that their current situation is meaningless and are motivated to re-establish a sense of meaningfulness. Building on the literature that conceptualizes social identification as source of meaningfulness, we 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 in-group symbol, mediated by people’s need to engage in meaningful behavior (Study 5). Several measures ruled out 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
On Boredom and Social Identity: A Pragmatic Meaning-Regulation Approach

Boredom is an experience that 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, boredom 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 manuscript, 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 suggested definitions and descriptions of boredom. Notable definitions have for example been offered by Mikolas and Vodanocich (1993), who stated that boredom involves “a state of relatively low arousal and dissatisfaction which is attributed to an inadequately stimulating environment” (p. 1) 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; see also 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; Hill & Perkins, 1985; Mikulas & Vodanovich 1993; Fahlman, Marcер, Gaskocski, Eastwood, & Eastwood, 2009). Most of the boredom
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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, & Callender, 2001; Vodanovich, Verner, & Gilbride 1991).

Besides research on individual differences in boredom tendencies, a handful of studies 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 towards their situation (Smith & Elsworth, 1985).

Moreover, boredom has a distinct bodily expression, with people leaning their heads backwards, collapsed bodies, and 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; Smith, Wagaman, & Handley, 2009; Van Tilburg & Igou, 2011a; see also 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, 2011a; 2011b). The fundamental conception that life should be meaningful, should make sense, and 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, trans. 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; see also Fromm, 1972, 1973), eating disorders (Jervis, Spicer, Manson, 2003; Stickney & Miltenberger, 1999), or 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; Smith et al., 1992). Similarly, we argue that bored people are motivated to engage in strategies that are considered helpful for re-establishing a sense of meaningfulness (Barbalet, 1999; Van Tilburg & Igou, 2011a; 2011b), 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 (see also Reicher, Spears, & Postmes, 1995; Spears,
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Scheepers, Jetten, Doosje, Ellemers, & Postmes, 2004). Being social psychologists, house owners, or 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; see also 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, PaSamini, & Sacchi, 2002; Castano, Yzerbyt, & PaSamino, 2004; 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, Greenberg, & Solomon, 1997; see also 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; 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; 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 Due to 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, 2011a; 2011b). 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 towards 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, Pyszczynski, & Solomon, 1986; 1997; Greenberg, Koole & Pyszczynski, 2004), 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 believes 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 relatively 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.
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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 pronunciation 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. Thirty-nine Irish students (23 women, 16 men; $M_{age} = 23.26, SD = 6.41$) participated in this study and were randomly assigned to the High Boredom or Low Boredom condition of a between-subjects design.¹

Procedure and materials. We induced boredom either by having participants engage in the boring task of counting the amount of letters in sentences (High Boredom condition; see 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 seven-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
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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 towards 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.** Forty-seven Irish students (28 women, 19 men; \(M_{\text{age}} = 19.23, SD = 1.80\)) were randomly assigned to either the High Boredom or Low Boredom condition of a between-subjects design in exchange for a beverage and a candy bar.

**Procedure and materials.** Participants were seated behind a computer that randomly flashed series of in-between 5 through 15 squares for 1.5 seconds. Each series of squares was horizontally presented in the centre of the computer screen on a white background; the surface of each square approximated 0.25 cm\(^2\) and there was 2 mm distance between each individual square (see Appendix). After a series of squares was flashed on the screen, participants estimated the amount of squares they had just seen. Participants in the Low Boredom condition completed 50 trials, whereas those in the High Boredom 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
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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 offenders’ 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 ($M = 3.78$, $SD = 1.76$), $F(1, 45) = 5.32, p = .03, \eta^2 = .11$.

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
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gave longer jail sentences to the outgroup offender ($M = 7.21$, $SD = 4.45$) compared to
those in the Low Boredom condition ($M = 5.08$, $SD = 1.83$), $F(1, 45) = 5.06$, $p = .03$, $\eta^2$
$= .10$.

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 both the evaluation of an ingroup member
and 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 jail
sentences should be qualified by the group to which the offender belongs to. We
hypothesized that, under high boredom, participants would give longer sentences to an
outgroup offender compared to an ingroup offender.
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Method

Participants and design. Ninety Irish people in the centre of a large city (45 men, 45 women, $M_{age} = 24.70, SD = 11.34$) were randomly assigned to one of the conditions of a 2 (Boredom: High vs. Low) x 2 (Offender: Irish vs. English) between-subjects factorial design in exchange for a beverage at a local cafe.

Procedure and materials. We manipulated boredom by asking participants to draw lines through either 3 large spirals (Low Boredom condition) or 9 large spirals (High Boredom condition; see 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 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 ($M = 3.27, SD = 1.85$), $F(1, 85) = 7.48, p < .01, \eta^2 = .08$.4
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 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, $t(86) = 2.16, p = .04, d = 0.47$. 
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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; 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 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 term. However, when an Irishman’s attachment to being Irish is rather weak, there still exists the possibility to increase 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 due to 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 reflect the degree to which participants identified with the groups. 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). Little bored participants 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.
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Method

Participants and design. Fifty-three Irish undergraduate students (29 women, 24 men; $M_{age} = 20.19$, $SD = 2.32$) 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 a circle ‘A’ to the circle labeled ‘B’ and then from circle “B” to the circle labeled ‘C’ (see 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 meaninglessness 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, and frustration, sadness, 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, 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,
meaninglessness 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 $Fs < 1$). The effects of our manipulation can thus specifically be attributed to boredom and meaninglessness and not to other affective states.

**Results and Discussion**

Before averaging participants’ ratings of each pair of evaluative items (all $rs > .51$, all $ps < .001$), we first added the value of 4 to the second items in order 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 ($M_{Group1} = 6.42, SD_{Group1} = 0.69; M_{Group2} = 5.98, SD_{Group2} = 0.99; M_{Group3} = 5.75, SD_{Group3} = 1.15$, respectively).

Importantly, the linear boredom x 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 ($M_{Group1} = 6.43, SD_{Group1} = 0.65; M_{Group2} = 5.77, SD_{Group2} = 1.17; M_{Group3} = 5.29, SD_{Group3} = 1.18$, 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 group 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 affect 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 indicate 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 re-establish 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 pro-social behavior (Van Tilburg, & Igou, 2011b). 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.** Sixty 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 either by having participants engage in the boring task of copying either five references (High Boredom condition; see Appendix) or only one reference (Low Boredom condition). Participants next rated the extent to which they felt bored, 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 (see also Van Tilburg & Igou, in press). 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 forth symbol was again relatively neutral.
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 the Low Boredom condition ($M = 3.40, SD = 1.69$), $F(1, 57) = 11.13, p < .01, \eta^2 = .16$.

**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 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 ($M = 5.16, SD = 1.72$), $F(1, 58) = 7.64, p < .01, \eta^2 = .12$. 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
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, $B = 0.58$, $S_e = 0.15$, $p < .001$. In addition, the original significant effect of the boredom condition on the evaluation of the ingroup symbol, $B = 0.97$, $S_e = 0.37$, $p = .01$, was no longer reliable when controlling for participants’ motivation to do something meaningful, $B = 0.25$, $S_e = 0.38$, $p = .52$. Importantly, 5,000 accelerated and bias-corrected bootstraps (Hayes, 2008) confirmed the existence of a significant mediated effect, $0.31 < B_{95} < 1.19$, total $R^2 = 0.30$. Taken together, these results indicate that people’s motivation to engage in meaningful behavior mediates the link between boredom and social identification.

General Discussion

Threats to people’s perceptions of meaningfulness increase the 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 subsequently tested the hypothesis that boredom renders people more favorable towards their ingroups and less favorable towards outgroups. We first tested this hypothesis by having Irish participants indicate their preference for the Irish name Eoin over its international
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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 9 versus 3 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 that 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 towards their ingroups
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and more negative towards 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, 2011a; 2011b) – 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, 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 re-establishing 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 re-establishment of meaningfulness. Importantly, bored people’s attempts to re-establish meaning (for example by social identification) may primarily reflect the belief that these attempts may foster meaningfulness (e.g., Van Tilburg & Igou, 2011b), but that may not always mean that people succeed in re-establishing 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., Wilson & Gilbert, 2003; Igou, 2004, 2008).

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, p. 9) 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.” 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 towards ingroups and outgroups held by bored people may polarize, creating a greater discrepancy between the groups. Importantly, state boredom may fuel hostile sentiments towards outgroups. Speculatively, the heightened hostile and aggressive tendencies observed among easily bored people may be particularly expressed towards 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 get 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 that particular 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. Further, 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.
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Notes

1 We excluded data from very few non-Irish participants (Studies 1-3, & 5), following inspection of reported nationality.

2 A mediation analysis (Preacher and Hayes, 2008) with the boredom manipulation as independent variable (0 = Low; 1 = High), meaninglessness as dependent variable, and experienced boredom as mediator suggested that participants’ experienced boredom predicted meaninglessness, $B = 0.24, S_e = 0.14, p = .09$. The original effect of the boredom manipulation on meaninglessness was no longer reliable when controlling for participants’ level of boredom, $B = 0.70, S_e = 0.49, p = .17$, and 5,000 accelerated and bias-corrected bootstraps (Hayes, 2008) 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 Footnote 2 (Study 2), confirmed that participants’ experienced boredom predicted meaninglessness, $B = 0.64, S_e = 0.10, p < .001$. The original significant effect of the boredom manipulation on meaninglessness became smaller after controlling for participants’ level of boredom, $B = 0.67, S_e = 0.39, p = .09$ and 5,000 accelerated and bias-corrected bootstraps (Hayes, 2008) confirmed the existence of a significant mediated effect, $0.08 < B_{95} < 1.08$.

5 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
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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 ($M_{\text{Group}1} = 6.13, SD_{\text{Group}1} = 1.06; M_{\text{Group}2} = 5.60, SD_{\text{Group}2} = 1.18; M_{\text{Group}3} = 4.73, SD_{\text{Group}3} = 1.94$, respectively).

6 A similar mediation analysis as in Footnotes 2 and 4 (Study 2 & 3), confirmed that participants’ experienced boredom predicted meaninglessness, $B = 0.46, S_e = 0.13, p < .001$. The original significant effect of the boredom manipulation on meaninglessness was no longer reliable when controlling for participants’ level of boredom, $B = 0.73, S_e = 0.48, p = .53$ and 5,000 accelerated and bias-corrected bootstraps (Hayes, 2008) 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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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).
Figure 2: Evaluations of Self-Generated Ingroups as a Function of Boredom (Study 4).


Figure 3: Irish Participants’ Evaluations of a Shamrock and Neutral Symbols as a Function of Boredom (Study 5)
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Figure 4: Ingroup Symbol Evaluations as a Function of the Motivation to do Something Meaningful and Induced Boredom (Study 5)

Figure 4: 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). **p < .01; ***p < .001. Indirect effect of the boredom manipulation on nostalgic memory: 0.31 < B_{95} < 1.19.
Appendix

A  Boredom Manipulation Study 1: Letter Counting Example

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


Boredom Manipulation Study 2: Square Estimation Task Example

□□□□□□□□□□□□□□□□□□□

Approximately how many squares did you just see?

Boredom Manipulation Study 3: Drawing Spirals Example

A series of spirals are 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.

A  Boredom Manipulation Study 5: Reference Copying Task Example
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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
CHAPTER 5

WHY BORED GEORGE HELPS OTHERS:

A PRAGMATIC MEANING-REGULATION HYPOTHESIS ON BOREDOM AND PROSOCIAL BEHAVIOR
CHAPTER 5 – BOREDOM AND PROSOCIAL BEHAVIOR

Why Bored George Helps Others:
A Pragmatic Meaning-Regulation Hypothesis on Boredom and Prosocial Behavior

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Abstract

Previous research suggests that the unpleasant experience of boredom is correlated with the motivation to establish a sense of meaning and with antisocial behaviors. However, in contrast to earlier research, we argue that boredom can promote prosocial behavior. According to our pragmatic meaning-regulation hypothesis, bored people feel that their actions are meaningless and they are motivated to engage in meaningful behavior. We argue that if prosocial behavior fulfills this requirement, boredom promotes prosocial behavior. We tested this hypothesis in a series of six studies. As predicted, bored people felt meaningless (Study 1a & 1b), boredom was associated with a search for meaning (Study 2), and boredom promoted prosocial behavior (Study 3 & 4) if it had the potential of re-establishing perceived meaningfulness (Study 5 & 6). Our novel findings are discussed in relation to the existing boredom research and contemporary perspectives on meaning-regulation.

Keywords: Boredom, meaning, prosocial behavior, self-regulation
A Pragmatic Meaning-Regulation Hypothesis on Boredom and Prosocial Behavior

It’s Monday morning and George is bored. He cannot postpone his administrative duties any longer. Today he is busy with filling in (and then copying!) 23 extensive forms relating to his travel plans, office supplies, and exam procedures. As always, this involves many detailed email exchanges and phone conversations with the administration. George struggles to find any excitement in this activity, but he knows that he has to get it over with. While filling in forms, he is reminded of his teenage years when he had to do many things that felt utterly meaningless to him (e.g., attending geometry classes). It feels like he’s revisiting the experiences of the past, and is desperately longing for a situation in which life has more to offer than this boring activity.

Is it possible that someone would benefit from George’s boredom? Sure, some administration representatives appreciate that employees follow the procedures, but would other people benefit from George’s state of mind? We propose that engagement in a boring task can promote subsequent prosocial behaviors (e.g., charity support, blood donations). Why would bored people be more prosocial than others? And can we generally expect bored people to be more prosocial than others? To answer these questions we first need to consider the experience of boredom in more detail.

The experience of boredom is aversive (e.g., Smith & Ellsworth, 1985); one seems unable to passionately engage in an activity, and feels utterly passive. Being bored seems easily imaginable, but few conceptualizations have been offered within the literature to capture essential characteristics of this common, yet little examined experience. Fromm (1972, 1973) characterized boredom as a feeling of “emptiness”, a lack of inner productivity and interest in life, and other research identified boredom as entailing a general lack of mental arousal (e.g., Leong & Schneller, 1993), or a lack of
interest in a particular task (Sansone, Weir, Harpster, & Morgan, 1992). In line with both these accounts, the sociologist Barbalet (1999) suggested that boredom is the “restless, irritable, feeling that the subject’s current activity or situation holds no appeal” (p. 631). That may be true for George filling in forms, but in what respect is boredom different from other negative affective states that can accompany an unpleasant task? In past research we observed that bored people feel restless and unchallenged at the same time and this is accompanied by thinking that the situation serves no purpose, an experience that could be uniquely attributed to feeling bored rather than feeling frustrated, angry, or sad.

Csikszentmihalyi (1990) offered an intriguing explanation for when boredom is experienced by suggesting that people get bored when their skills surpass the challenge of a task. In addition, people who have a lack of autonomy or feel that they have nothing to contribute to society are especially prone to feeling bored (Caldwell, Darling, Payne, & Dowdy, 1999). Boredom has been suggested to result from feeling powerless, alienated, having lack of deep interest or involvement in the social world (Fromm, 1972, 1973), and boredom involves a lack of perceived meaningfulness in one’s activities or circumstances which may be caused by the alienation or detachment one experiences in repetitive tasks (Barbalet, 1999). That is, George may be bored because the forms that he has to fill in are not challenging, because the forms are all quite similar, and because filling in those forms seem unrelated to his core interests.

Paradoxically, even though boredom is associated with a general feeling of passivity, it has been suggested to be a very strong motivator; boredom may drive people to alter the situation to increase its challenge (e.g., Csikszentmihalyi, 1990), and people who are easily bored typically yield high scores on dispositional measures of sensation seeking (Dahlen, Martin, Ragan, & Kuhlman, 2004), which may at least partially explain the positive relationship between boredom proneness with aggression,
anger, and hostility (e.g., Dahlen et al., 2004; Rupp & Vodanovich, 1997; see also Fromm, 1973). In addition, research suggests that boredom can elicit particular self-regulatory responses. In a series of studies, Sansone and colleagues (1992) found that the engagement in boring tasks can motivate people to generate strategies to remain interested (e.g., reframing a boring task as a puzzle). Furthermore, Smith, Wagaman, Harpster, and Morgan (1992) showed that when given the opportunity, people with a promotion focus (versus a prevention focus) were more likely to make an act ‘fun’ by increasing variety to a dull procedure (e.g., varying the use of lower and uppercase letters). Importantly, however, we suggest that boredom increases motivations that affect George’s behavior even after engaging in the boring task. Boredom makes people long for different and purposeful activities, and as a result people turn towards more challenging and meaningful activities. After filling in those 23 forms, George thus turns towards what he perceives to be really meaningful in life.

A Pragmatic Meaning-Regulation Process for Boredom and Prosocial Behavior

Research in the domain of existential psychology suggests that people strive to perceive their lives as meaningful (Greenberg, Koole, & Pyszczynski, 2004; Heine et al., 2006). When people face challenges towards perceiving their life as meaningful, for example due to death reminders (e.g., Greenberg et al., 2004), uncertainty (e.g., Van den Bos, 2001), or social exclusion (e.g., Case & Williams, 2004) then meaningfulness is threatened, and people become motivated to re-attain a sense of meaningfulness.

Heine and colleagues (2006) suggest that people are flexible when it comes to meaning-regulation. Specifically, when perceptions of meaning are threatened – for example due to mortality salience or ostracism – then people can undertake a variety of strategies (e.g., boosting self-esteem, increasing belongingness, adhering to worldviews, increasing certainty) that all contribute to the overarching perception that life is meaningful. In earlier research, we demonstrated that people are pragmatic when it
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comes to meaning-regulation. That is, being motivated to re-establish a sense of meaning makes people sensitive to the extent to which a potential course of action suits their meaning-regulation goal, and people subsequently engage in particularly behaviors that hold high potential to re-establish a sense of meaningfulness. In other words, people who wish to regulate meaningfulness are more attuned to helpful responses: the extent to which behavior is perceived as an instrumental means for the goal (e.g., see Heckhausen & Heckhausen, 2008: see also Kruglanski, Shah, Fishbach, Friedman, Chun, & Sleeth-Keppler, 2002; Shah & Kruglanski, 2000; 2003) to (re)attain a sense of meaningfulness. Effectively, when people feel meaningless, they engage in behavior that is perceived as instrumental for re-establishing a sense of meaningfulness.

It is this pragmatic meaning-regulation process that describes the link between the experiences of meaninglessness when people are bored and their motivation to act prosocially. The literature strongly suggests that prosocial behavior is generally positively related to attaining a sense of meaningfulness (e.g., Caprara & Steca, 2005; Furrow, King, & White, 2004; Shek, Ma, & Cheung, 1994; see also Heine et al., 2006). In addition, past research suggests that prosocial behavior (e.g., charity support, blood donations) increases after people are exposed to meaning-threats such as death (Jonas, Schimel, Greenberg, & Pyszczynski, 2002 see also Joireman & Duell, 2005; Joireman & Duell, 2007). As noted above, boredom is a threat to perceived meaningfulness, as explicitly stated by Barbalet: “Boredom is anxiety about the absence of meaning in a person’s activities or circumstances” (1999, p. 641). We therefore propose that prosocial behavior is promoted due to boredom as a meaning re-establishing strategy, if the concrete prosocial behavior in a given situation has the capacity to achieve this goal.

How does our hypothesis relate to George? First of all, it implies that the boring activity of filling in forms makes George feel meaningless. If George then needs to run to the grocery store to get food before the store’s closing time, he may afterwards share
some of the food with the hungry homeless, who he encounters in front of the store. On
the more general level, we thus hypothesize that boredom – which involves a sense of
meaninglessness – can promote prosocial behavior – which can serve as meaningful
behavior. Investigating the link between boredom and prosocial behavior is not only
highly novel but also counter-intuitive; past research has associated boredom almost
exclusively with aversive correlates (e.g., Dahlen et. al, 2004; Rupp & Vodanovich,
1997; see also Fromm, 1973), yet closer inspection of the particular motives associated
with boredom (e.g., meaning-regulation) suggests a much richer array of potential
consequences that may well go beyond merely negative outcomes, such as prosocial
behavior. Moreover, few studies have addressed the actual experience of boredom but
have rather almost exclusively focused on the disposition to feel bored (for exceptions,
see Sansone et al., 1992; Smith et al., 1992). Investigating the actual experience may
provide valuable insights in the motivational character of boredom and can shed light on
causal relationships with subsequent behavior. Overall, we strongly believe that
investigating the seemingly common experience of boredom is critical to its
psychological understanding.

The Current Research

Based on the assumption that boredom is indeed associated with a lack of
perceived meaningfulness and that people are motivated to re-establish perceived
meaningfulness, we hypothesized that boredom promotes prosocial behavior. To our
knowledge, the influence of boredom on meaning-regulation processes has never been
systematically examined. We therefore tested in the first 3 studies whether boredom
would increase perceived meaningfulness and whether boredom would increase
meaning re-establishment motivations. In Study 1a we had participants recall a past
experience of boredom and compared participants’ meaningfulness evaluations with
experiences where no boredom was present, where participants felt engaged, or where
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they were sad. Study 1b served as an extension of Study 1a by having participants experience boredom, followed by a measure of meaninglessness. In Study 2 we used a correlational design to test whether boredom proneness is associated with viewing life as meaningless and searching for meaning in life. In the remaining 4 studies we investigated whether boredom increases prosocial behavior in the form of charity support (Study 3, 5, & 6) and blood donations (Study 4). Importantly, we tested the strategic aspect of prosocial behavior as a means for re-establishing a sense of meaningfulness by comparing bored people’s willingness to engage in unpleasant but meaningful behavior against meaningless but pleasant behavior (Study 5), and by manipulating the instrumentality of charity donations as means for meaningfulness (Study 6).

**Study 1a: Recalled Boredom and Meaninglessness**

Study 1a was a test of our assumption that boredom is associated with meaninglessness. We asked participants to recall past boring experiences and their evaluation of this experience was compared to three other conditions. Next to a ‘no boredom’ control condition we included a condition where participants recalled an experience in which they felt engaged; following Csikszentmihalyi (1999), an experience of ‘optimal engagement’ (i.e. flow) typically excludes feelings of boredom and would hence serve as a sound comparison to the boredom condition. We also included a sadness condition to test whether the effects of boredom on perceived meaninglessness would differ from the potential effects of another, possibly more typical negative affective state.

**Method**

**Participants and design.** One hundred and five people visiting a shopping mall of a large city (29 men, 76 women; $M_{age} = 33.94, SD = 17.48$) participated in a short paper-and-pencil study and were randomly assigned to either the ‘boredom’, ‘no
Procedure and materials. Participants were seated in a café and were given a short paper-and-pencil questionnaire entitled ‘feelings and emotions’. After participants gave their informed consent and reported demographic information, they described a past situation. We varied whether they described a situation in which they experienced boredom, a situation in which they did not experience boredom, a situation where they felt engaged, or a situation in which they experienced sadness. Participants wrote about this situation in such a way that another person could easily imagine what they had experienced. Participants then rated the questions “How bored did you feel during this situation?” and “How sad did you feel during this situation?” on seven-point interval scales ranging from 1 (not at all) to 7 (very much). Participants then indicated the extent to which this situation was meaningless, purposeless, senseless, valueless, and insignificant on five seven-point interval scales ranging from 1 (not at all) to 7 (very much), and then they rated the extent to which they felt meaningless, purposeless, senseless, valueless, and insignificant during the situation on five seven-point interval scales ranging from 1 (not at all) to 7 (very much). These multi-item measures have proven to be reliable indicators of perceived meaninglessness in our past research.

Results

On boredom. The item measuring boredom was entered as a dependent variable into a one-way ANOVA with the experience that participants recalled serving as independent variable. This analysis indicated significant differences between the conditions, $F(3, 101) = 33.81, p < .001$, $\eta^2 = .50$ (see Figure 1a). Participants reported that they experienced more boredom in the boring situation ($M = 6.05, SD = 0.71$) compared to the sad situation ($M = 2.03, SD = 1.63$), $t(101) = 47.30, p < .001$, $d = 9.41$, compared to participants who recalled a situation in which they felt engaged ($M = 2.16$, $SD = 0.71$).
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SD = 2.30), t(101) = 29.68, p < .001, d = 5.91, and compared to the no boredom condition (M = 1.54, SD = 1.37), t(101) = 42.44, p < .001, d = 8.45. The sadness, engagement, and no boredom conditions did not significantly differ from each other (ps > .17).

On sadness. Participants’ scores on the item measuring sadness were entered as dependent variable into a one-way ANOVA with the recalled experience as independent variable. This analysis revealed significant differences between the conditions, F(3, 101) = 32.38, p < .001, η² = .49 (see Figure 1b). Specifically, participants experienced more sadness in the sad situation (M = 6.15, SD = 1.44) compared to the boring situation (M = 2.63, SD = 1.67), t(101) = 6.49, p < .001, d = 1.29, compared to the condition where boredom was absent (M = 1.64, SD = 1.79), t(101) = 9.32, p < .001, d = 1.85, and compared to when participants were engaged (M = 3.16, SD = 2.54), t(101) = 5.99, p < .001, d = 1.19. In addition, the engagement condition yielded higher sadness scores compared to the no boredom condition, t(101) = 2.93, p < .01, d = 0.58, and sadness was higher in the boredom condition compared to the no boredom condition, t(101) = 1.77, p = .08, d = 0.35. The boredom and engagement conditions did not significantly differ from each other (t < 1).

On the meaninglessness of the situation. The items assessing the meaninglessness of the situation were averaged (α = .93) and entered into a one-way ANOVA with the recalled experience condition as independent variable. This analysis yielded a significant effect, F(3, 100) = 15.15, p < .001, η² = .31 (see Figure 2a). Specifically, boring situations were perceived as more meaningless (M = 4.75, SD = 1.91) compared to sad situations (M = 2.69, SD = 1.72), t(100) = 4.39, p < .001, d = 0.88, compared to situations that did not involve boredom (M = 1.84, SD = 1.38), t(100) = 6.03, p < .001, d = 1.21, and compared to the engagement condition (M = 1.82, SD = 1.50), t(100) = 5.95, p < .001, d = 0.19. In addition, the sadness condition yielded
significantly higher meaninglessness ratings compared to the engaging situation, \( t(100) = 2.01, p = .05, d = 0.40 \), and compared to the no boredom condition, \( t(100) = 2.01, p = .05, d = 0.40 \), whereas these latter conditions did not differ significantly from another (\( t < 1 \)).

Consistent with our predictions, boring situations were considered to be most meaningless. Sad situations, however, were perceived to be more meaningless compared to engaging situations and compared to situations where boredom was absent. Also, participants in the boredom condition revealed a tendency to feel sadder compared to the no boredom condition. We therefore tested whether sadness ratings could explain the results we obtained on the meaninglessness of the situation; a one-way ANCOVA was conducted with the recalled experience as independent variable, the meaninglessness scores as dependent variable, and the reported sadness as covariate. Note that recalled experiences still affected perceived meaninglessness, \( F(3, 99) = 15.06, p < .001, \eta^2 = .31 \). In addition, partial correlation analysis revealed that the correlation between boredom and meaninglessness of the situation (\( r = .57, p < .001 \)) remained significant after controlling for sadness (\( r_p = .83, p < .001 \)).

**On experienced meaninglessness.** Scores on the items measuring participants’ experienced meaninglessness were averaged (\( \alpha = .93 \)) and were entered as a dependent variable into a one-way ANOVA with the recalled experience as independent variable. This analysis revealed significant differences between the conditions, \( F(3, 99) = 14.97, p < .001, \eta^2 = .31 \) (see Figure 2b). Boring situations were associated to a greater extent with the experience of meaninglessness (\( M = 4.33, SD = 1.47 \)) compared to sad situations (\( M = 3.02, SD = 1.78 \)), \( t(99) = 2.90, p < .01, d = 0.58 \), compared to the no boredom condition (\( M = 1.55, SD = 1.13 \)), \( t(99) = 6.01, p < .001, d = 1.21 \), and compared to situation in which participants felt engaged (\( M = 1.82, SD = 1.60 \)), \( t(99) = 5.29, p < .001, d = 1.06 \). Participants in the sadness condition reported that they
experienced a greater sense of meaninglessness compared to the no boredom condition, \( t(99) = 3.71, p < .001, d = 0.75 \), and compared to the engagement condition, \( t(99) = 2.93, p < .01, d = 0.59 \), whereas the no boredom and engagement conditions did not differ significantly from another (\( t < 1 \)).

Similar to the results for meaninglessness of the situation, participants experienced meaninglessness to the greatest extent during boring situations. However, the sadness condition also elicited meaninglessness. We tested whether sadness rather than boredom could account for the results obtained on participants’ experienced sense of meaninglessness. A one-way ANCOVA with the recalled experience as independent variable, with participants’ scores on experienced meaninglessness as dependent variable, and with the reported sadness as covariate still yielded a significant effect, \( F(3, 98) = 13.72, p < .001, \eta^2 = .30 \). In addition, partial correlations revealed that the correlation between boredom and experienced meaninglessness (\( r = .53, p < .001 \)) remained significant after controlling for sadness (\( r_p = .57, p < .001 \)).

**Discussion**

The results of this study indicate, as hypothesized, that boredom is associated with an increase in meaninglessness. This finding is important in order to understand the meaning-regulation process that we propose. In addition, these findings were independent of another, presumably more general, form of negative affect: sadness. That is, the increase in meaninglessness as a function of boredom was largely unrelated to sadness. The observation that the link between boredom and meaninglessness exists independently of sadness is important as it illustrates that boredom’s association with meaninglessness is not just representing any form of negative affect but rather seems to be especially pronounced for boredom. Participants’ experience of boredom, however, took place in the past and participants’ memories of past affective states may be inaccurate. In addition, it could be that results reflect a cognitive association between
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lay expectations of boredom and meaninglessness rather than the actual affective experience of boredom. In Study 1b we therefore directly manipulated the experience of boredom.

Study 1b: Experienced Boredom and Meaninglessness

Study 1b was designed to test whether the experienced state of boredom increases a sense of meaninglessness. The effect of boredom was tested by assessing participants’ sense of meaninglessness after a highly repetitive task compared to a control condition. In addition, the boredom and meaningfulness measures were embedded in several other emotion measures, allowing us to test whether the experienced boredom accounted for meaninglessness compared to other emotions.

Method

Participants and design. Eighty-two students (16 men, 66 women; \( M_{\text{age}} = 20.29, SD = 4.05 \)) participated in this study and were randomly assigned to either one of two conditions (boredom vs. control) of a between factorial design in exchange for 3 Euros.

Procedure and materials. Participants were seated in cubicles and gave their informed consent. After participants reported demographic information, we induced boredom via a ‘repetitive odds-estimation task’ The task consisted of a computer study with 200 trials in which the participants had to guess the odds of selecting a blue or red ball of a random distribution of colored balls. In the control condition participants did not engage in this task prior to the dependent measures. Participants’ experiences were assessed in a short questionnaire entitled ‘feelings and emotions’ that was presented as a separate study.

Specifically, participants were asked to report to what extent they experienced fear, envy, frustration, hope, shame, pride, boredom, sadness, disgust, and anger on ten seven-point scales ranging from 1 (not at all) to 7 (very much). We measured perceived
meaninglessness by asking participants to indicate the extent to which they felt meaningless, purposeless, senseless, valueless, and insignificant on five seven-point interval scales ranging from 1 (not at all) to 7 (very much).

Results

On boredom and other emotions. An ANOVA with the boredom rating as dependent variable and with manipulated boredom as independent variable was significant, $F(1, 80) = 25.94, p < .001, \eta^2 = .25$. People felt more bored in the boredom condition ($M = 4.79, SD = 1.71$) compared to the control condition ($M = 2.97, SD = 1.50$). In addition, none of the nine other experienced emotions differed across conditions (all $p$s $> .21$), indicating that the boredom induction unlikely affected experienced fear, envy, frustration, hope, shame, pride, sadness, disgust, or anger.

On meaninglessness. A one-way ANOVA with the boredom manipulation as independent variable and the average scores on meaninglessness ($\alpha = .92$) as a dependent variable yielded a significant effect, $F(1, 80) = 8.15, p < .01, \eta^2 = .09$. Participants in the boredom condition indicated that they experienced a greater sense of meaninglessness ($M = 2.94, SD = 1.34$) than participants in the control condition ($M = 2.18, SD = 1.02$).

Mediation. An analysis of multiple mediators was conducted (Preacher & Hayes, 2008) to test whether it was indeed particularly the experience of boredom rather than any of the other emotions that could account for the increase in perceived meaninglessness after participants engaged in the repetitive computer task. For this purpose, boredom and the other emotions were entered as proposed mediators of the effect of the boredom induction (control = 0, boredom = 1) on meaninglessness in the analysis, revealing that the mediating effect of boredom was significant, $B = 0.42, S_e = 0.16, Z = 2.69, p < .01$, whereas none of the other emotions acted as mediators (all $p$s $> .42$). In addition, the boredom induction significantly affected experienced boredom, $B$
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$e = 1.82, Se = 0.36, t(70) = 5.09, p < .001$, experienced boredom significantly affected meaningfulness, $B = 0.23, Se = 0.08, t(70) = 2.94, p < .01$, and the boredom induction no longer had a reliable effect on meaningfulness ($t < 1$), total $R^2 = 0.35$. An overview of this meditational process is depicted in Figure 3. Importantly, this pattern of results confirms that the increase in meaningfulness due to our boredom induction can be explained specifically by the mediating affective experience of boredom.

Discussion

Study 1b replicated the finding of Study 1a that boredom is associated with perceived meaningfulness, however, the experimental design allowed us to directly demonstrate that boredom increases meaningfulness. In addition, the mediation analysis confirmed that meaningfulness increased as a function of the intensity of experienced boredom. In addition, none of these effects could be attributed to a variety of other emotions, including frustration, anger, and sadness. In conclusion, this study indicates that experienced boredom is associated with a sense of meaningfulness, and more so than for other common negative events.

Study 2: Boredom and the Quest for Meaningfulness

In the previous studies we found that boredom is associated with a sense of meaningfulness, as illustrated in our example where George’s boredom when filling in forms affects his perceptions that his actions and the situation are meaningless. In the current study we investigated how boredom is related to both perceived meaningfulness and the motivation to re-establish a sense of meaningfulness. This assumption is consistent with past research indicating that boredom can generally promote self-regulatory strategies to, for example, increase task interest or fun (Sansone et al., 1992; Smith et al., 2009), and the motivation of people to defend perceived meaningfulness when it is threatened (e.g., Heine et al., 2006).
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Whereas Study 1a and 1b focused on state or recalled boredom, the present study focused on people’s dispositional tendency to feel bored in relation to the presence and search for meaning in life. It was predicted that boredom proneness would be associated with less perceived meaning in life and would also be associated with a greater search for meaning in life, reflecting a meaning-regulation motive.

Method

Participants and design. Fifty-three people (12 men, 41 women; \(M_{\text{age}} = 24.23, SD = 9.57\)) in the center of a mid-sized city were willing to participate in exchange of a beverage at a local café. The study had a correlational design including a dispositional measure of boredom, and perceived as well as search for meaningfulness measures.

Procedure and materials. After participants provided informed consent and reported demographic information, they received a questionnaire containing three scales. Boredom was assessed using the boredom proneness scale (Farmer & Sundberg, 1986), which consists of 28 items (e.g., ‘I often find myself with nothing to do-time on my hands.’). Participants were asked about the extent to which they considered the statements to be applicable to themselves on five-point interval scales ranging from 1 (never) to 5 (most of the time). These measures were followed by the meaning in life questionnaire (Steger et al, 2006), which measures two facets of meaning in life that are conceptualized as independent on the scale’s level of assessment: the presence of meaning in life (e.g., ‘My life has a clear sense of purpose’) and the search for meaning in life (e.g., ‘I am searching for meaning in my life’). The presence of meaning in life scale contains items measuring meaningfulness and meaninglessness, whereas the search for meaning in life contains no reversed items. Both factors were measured with agreement ratings using seven-point interval scales that range from 1 (strongly disagree) to 7 (strongly agree). Next, the no meaning scale was administered (Kunzendorf & Maguire, 1995). This scale measures an absence rather than presence of
Results and Discussion

Boredom and perceived meaningfulness. After recoding the reversed items, average scores were computed for the boredom proneness scale (\( \alpha = .75 \)), the presence of meaning in life scale (\( \alpha = .86 \)), and the no meaning scale (\( \alpha = .90 \)). The predicted negative correlation was observed between boredom proneness and the presence of meaning in life (\( r = -.57, p < .001 \)). In addition, we observed the predicted positive correlation between boredom proneness and participants’ scores on the no meaning scale (\( r = .46, p < .001 \)). Consistent with our predictions, the results reveal that people who are prone to feeling bored tend to view life as relatively meaningless.

Boredom and the search for meaningfulness. We first computed average scores on the search for meaning in life scale (\( \alpha = .89 \)). A correlation analysis revealed the predicted positive correlation between boredom proneness and participants’ search for meaning in life (\( r = .48, p < .001 \)). This correlation reveals that people who are prone to feeling bored regard life not only as relatively meaningless, but are also more motivated to search for meaning in life. Consistent with research, which indicates that boredom increases people’s motivation to make tasks more interesting (e.g., Sansone et al., 1992; Smith et al., 2009), our results suggest that boredom promotes responses that potentially improve the state that people are in. Importantly, our study suggest that boredom motivates the specific regulation of personal meaningfulness – a self-regulatory strategy that has wide ranging implications. Our next studies will
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demonstrate how boredom, a state of meaninglessness, increases behavior that is
generally considered to be a central source of meaningfulness: prosocial behavior.

**Study 3: Boredom Increases Charity Support**

Study 1a, 1b and 2 revealed that boredom is associated with meaninglessness and that boredom motivates the pursuit of meaningfulness. According to our pragmatic meaning-regulation hypothesis, actions that are regarded as having the potential to re-establish a sense of meaningfulness are likely to be pursued when people are bored. Generally, prosocial behavior is associated with meaningfulness (Caprara & Steca, 2005; Furrow et al., 2004; Shek et al., 1994; see also Heine et al., 2006), and the specific prosocial behavior of charity support has been shown to increase due to meaning threats (Jonas et al., 2002; see also Joireman & Duell, 2005; Joireman & Duell, 2007). Would bored George be more prosocial after filling in many forms compared to a normal day when he would engage in more meaningful activities? In Study 3 we tested whether prosocial behavior increases as a function of boredom, and as indicator of prosocial behavior we used charity support.

**Method**

**Participants and design.** Thirty-one students (10 men, 21 women; \( M_{age} = 19.70, SD = 1.77 \)) participated in this study and were randomly assigned to either one of the 2 conditions (boredom vs. control) of a between factorial design in exchange for 3 Euros.

**Procedure and materials.** Given that the boredom manipulation in Study 1b was effective, we adopted the identical boredom induction procedure (‘repetitive odds-estimation task’) for this study. However, given that time had passed between these two studies, we conducted a pilot study \( N = 16 \) to check again for the effectiveness of the manipulation. A pre-test post-test design conformed that the engagement in a repetitive
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Task increased participants’ boredom ($M_{pre} = 2.81$, $SD_{pre} = 1.987$ vs. $M_{post} = 4.06$, $SD_{post} = 2.11$), $t(15) = 3.74$, $p < .01$, $d = 1.93$.

Our charity support measure consisted of a description of a charity project that was promoting educational services in Zambia. The description informed participants that their university planned to start a large scale promotion for this charity project. The organizers behind the project issued that they were interested whether it was realistic to start an extensive charity campaign for this cause and they wanted to know how much people would be willing to donate to the charity campaign. A small promotional poster was printed on the form with the header: “Make a difference for your fellow people.” The description further issued that potential donations were kept confidential. After this description, participants were asked how many euros they would be willing to donate to the charity organization. Afterwards, participants were thanked and debriefed.

**Results**

 Participants’ donations were entered as a dependent variable into a one-way ANOVA with the boredom induction as independent variable. The analysis revealed significant differences between the conditions, $F(1, 29) = 7.67$, $p = .01$, $\eta^2 = .21$.

Consistent with the predictions, participants were willing to give more euros to charity when they were in the boredom condition ($M = 12.94$, $SD = 9.31$) than when they were in the control condition ($M = 5.73$, $SD = 3.96$).

**Discussion**

Consistent with our prediction, participants were willing to donate more to charity under high compared to low boredom. Given that charity support as a specific form of prosocial behavior increases when experiencing a threat to one’s perceived meaningfulness, and that prosocial behavior has been generally related to attainment of a sense of meaningfulness (e.g., Caprara & Steca, 2005; Jonas et al., 2002), these results support the hypothesis that people who are bored engage in responses that have the
potential to re-establish a sense of meaningfulness. Counter intuitively, these results indicate that when George feels bored, which involves a sense of utter meaninglessness, then this experience makes George more likely to act prosocially.

**Study 4: Boredom Increases Blood Donations**

Study 3 indicates that charity support, one particular form of prosocial behavior, increases as a function of boredom. We sought to replicate this finding in Study 4 with a different boredom induction and with a different form of prosocial behavior. Specifically, we manipulated boredom by asking participants to either copy a few versus many references and we measured prosocial behavior by assessing whether or not participants signed up to donate blood for a good cause.

**Method**

**Participants and design.** Fifty-five students (21 men, 34 women; \( M_{age} = 19.36, SD = 1.51 \)) participated in this study and were randomly assigned to either one of the 2 conditions (boredom: high vs. low) of a between factorial design in exchange for 3 Euros.

**Procedure and materials.** Participants were seated in a lab and gave their informed consent. After participants reported demographic information, we manipulated boredom by means of a ‘reference copying task’. Specifically, in the low boredom condition participants copied 2 references, in the high boredom condition they copied 10 references of literature on concrete (e.g., “Kosmatka, S.H.; Panarese, W.C. (1988). Design and control of concrete mixtures. Skokie, IL”). Participants then indicated the extent to which they were bored by responding to the item “To what extent did the task you just completed make you feel bored?” on a seven point interval scale ranging from 1 (not at all) to 7 (very much). Afterwards, participants worked on an unrelated filler task (evaluating a short text). As a next step, participants read a form describing that researchers at their university were looking for people who wanted to donate blood to
aid research on the treatment of cardiovascular diseases. Participants were asked to
decide whether or not to sign up for the blood donation by ticking a box (yes vs. no).
Then, participants were debriefed and thanked for their participation.

Results and Discussion

**Boredom.** Participants’ ratings of the boredom item were entered as a dependent
variable into a one-way ANOVA with the boredom condition as independent variable.
This confirmed that the participants in the high boredom condition felt more bored ($M = 6.17$, $SD = 1.17$) compared to those in the low boredom condition ($M = 5.27$, $SD = 1.80$), $F(1,53) = 4.97$, $p = .03$, $\eta^2 = .09$.

**Blood donations.** A chi-square analysis was conducted to test whether the
boredom manipulation significantly affected participants’ readiness to sign up for
donating blood. This analysis revealed a significant result, $\chi^2(1, N = 55) = 4.77$, $p = 0.03$, $\varphi = .29$, indicating that participants in the low boredom condition were less likely
to donate blood (23.1% donated) compared to participants in the high boredom
condition (51.7% donated). Participants in the high boredom condition thus seemed
more than twice as likely to sign up for donating blood compared to participants in the
low boredom condition. By using a different boredom manipulation than before and an
additional measure for prosocial behavior, the results of this study demonstrate the
overall robustness of boredom effects on prosocial behavior.

**Study 5: Boredom Promotes Unpleasant but Meaningful Behavior**

The previous studies confirmed that boredom leads to a lack of meaningfulness,
the motivation to engage in meaningful behavior, and promotes prosocial behaviors.
Importantly, we suggest that the prosocial behaviors follow from boredom as they offer
the opportunity to do something meaningful. However, meaningful prosocial behavior
may also elevate people’s moods. Could it be that boredom simply encourages prosocial
behavior *because* it would elevate their moods? If this was true, then bored people
would take every opportunity to engage in actions that would elevate their mood states. To rule out the alternative hypothesis that bored people only engage in meaningful behavior because they want to elevate their mood state, we contrast meaningful behavior against mood elevating behavior. More specifically, assessed people’s willingness to engage in relatively unpleasant but meaningful behavior and their willingness to engage in relatively pleasant but meaningless behavior. Based on our argument that boredom primarily promotes meaningful behavior (and not necessarily mood-elevating behavior), we predicted that boredom would increase people’s willingness to engage in the unpleasant meaningful behavior, but would in contrast not promote engagement in meaningless yet pleasant behavior. In addition, we also included a measure of affect states to verify that our manipulation specifically influenced boredom and not other affective states.

Method

Participants and design. Forty-nine students (17 men, 32 women; \(M_{age} = 19.43, SD = 4.76\)) participated in a short paper-and-pencil study and were randomly assigned to one of two conditions (boredom: high vs. low) of a between-subjects design in exchange for course credit.

Procedure and materials. Participants were seated in cubicles and gave their informed consent. Next, participants provided demographic information and worked on a computer task. In the computer task participants were presented with a series of ‘square frequency estimation’ trials. For each trial, participants were shown 5 to 15 squares for 1.5 seconds. Immediately after seeing these squares the participants had to guess how many they had seen by selecting the correct number from a list of numbers depicted on the screen. Participants in the low boredom condition performed 50 of these trials, whereas participants in the high boredom condition completed 100 trials. After this task, participants rated the extent to which they experienced boredom on a scale
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from 1 (not at all) to 7 (very much) and they completed the ten items of the positive and negative affect schedule short form (PANAS short form; MacKinnon, Jorm, Christensen, Korten, Jacomb, & Rodgers, 1999). This scale measures positive and negative affect by having participants rate five positive and five negative specific emotions (e.g., “To what extent do you generally feel upset?”) on scales from 1 (not at all) to 5 (extremely). Participants then read a ‘Pakistan’ and ‘Popcorn’ scenario of which we randomly varied the order. The Pakistan scenario started with a short description informing participants of the horrid consequences of the 2010 Pakistan flood. Next, participants read:

“The University has a special international charity programme that would allow you to visit Pakistan for some time, to help rebuilding the affected areas by means of participating in social, cultural, and engineering projects. Although students will not be exposed to any serious physical or medical risks, the university warns that chances are very high that you will face suffering people and it cannot be ruled out that you would be confronted with seeing corpses.”

Participants then indicated how willing they would be to help for this project on a scale from 1 (not at all) to 7 (very much). Additionally, participants indicated how many days they would be willing to help in Pakistan.

The Popcorn scenario started with a short description about its origin and the process involved in creating popcorn. Next, participants read:

“You feel like snacking when sitting on your couch at home. Specifically, you feel like eating popcorn. To get yourself some popcorn, you would need to walk to the supermarket.”

Participants then indicated how willing they were to get popcorn on a scale from 1 (not at all) to 7 (very much) and wrote down the amount of minutes that they would
be willing to spend on getting themselves some popcorn. Afterwards, participants were thanked, debriefed, and rewarded for their participation.

**Pilot study: Meaningfulness and pleasantness.** A pilot study was conducted to verify that the helping behavior was perceived to be more meaningful and more unpleasant relative to the helping behavior. Twenty-seven students ($M_{\text{age}} = 20.04$, 9 men, 18 women) were presented with both scenarios (in a random order) and then indicated the extent to which they regarded engaging in the two behaviors to be meaningful and unpleasant on two scales from 1 (*not at all*) to 5 (*very much*). Paired-sample t-tests confirmed that helping in Pakistan was considered to be more meaningful ($M = 4.74, SD = 0.45$) relative to getting Popcorn ($M = 2.11, SD = 0.97$), $t(26) = 15.47$, $p < .001$, $d = 6.07$. Moreover, helping in Pakistan was indeed also considered to be more unpleasant ($M = 3.44, SD = 1.01$) relative to getting Popcorn ($M = 2.26, SD = 1.38$), $t(26) = 3.47$, $p < .01$, $d = 1.36$.

**Results**

**Boredom.** Participants’ ratings of the boredom item were entered as a dependent variable into a one-way ANOVA with the boredom condition as independent variable. This confirmed that the participants in the high boredom condition felt more bored ($M = 4.92, SD = 1.55$) compared to those in the low boredom condition ($M = 5.77, SD = 0.85$), $F(1,47) = 5.26$, $p = .03$, $\eta^2 = .10$.

**Unpleasant meaningful behavior.** Participants’ willingness to help in Pakistan was entered as dependent variable into a one-way ANOVA with the recalled experience as independent variable. As reflected in Figure 4a, this analysis confirmed that participants were more willing to engage in the unpleasant meaningful behavior in the high boredom condition ($M = 5.59, SD = 1.26$) compared to participants in the low boredom condition ($M = 4.33, SD = 1.86$), $F(1, 47) = 7.31$, $p = .01$, $\eta^2 = .14$. As illustrated in Figure 4b, a similar analysis on the amount of days that participants were
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willing to help in Pakistan confirmed that participants were more willing to engage in the unpleasant meaningful behavior in the high boredom condition ($M = 24.73, SD = 19.01$) compared to participants in the low boredom condition ($M = 13.85, SD = 12.27$), $F(1, 47) = 5.86, p = .02, \eta^2 = .11$.

**Pleasant meaningless behavior** Participants’ willingness to get popcorn was entered as dependent variable in a one-way ANOVA with the recalled experience as independent variable. As reflected in Figure 4a, this analysis revealed no significant differences between the boredom conditions, $F(1, 47) = 1.86, p = .18, \eta^2 = .04$. As illustrated in Figure 4b, a similar analysis on the amount of minutes that participants were willing to help in walk to get popcorn revealed no significant difference between the conditions ($F < 1$).

**Positive and negative affect.** The five emotion items of the PANAS comprising the positive affect scale were averaged ($\alpha = .76$) and entered in a one-way ANOVA with the recalled experience as independent variable. This analysis revealed no significant difference in experienced positive affect across the conditions ($F < 1$). Similarly, no effects were observed on the averaged emotion items of the PANAS that comprise the negative affect subscale ($\alpha = .78; F < 1$). Importantly, these findings suggest that our boredom induction did not merely make people feel less positive or more negative indicated by the emotions included in the PANAS short-form. Rather, the manipulation induced boredom in particular.

**Discussion**

The current study was conducted to test if boredom promoted meaningful prosocial behavior, even when it was highly unpleasant. Consistent with our meaning-regulation framework, boredom did increase people’s willingness to help in the highly unpleasant but meaningful task of rebuilding Pakistan after the 2010 floods. In addition, people’s willingness to engage in the rather meaningless but quite pleasant activity of...
snacking popcorn did not vary as a function of boredom. Finally, our manipulation did make people feel bored but did not reduce positive affect nor did it increase negative affect as indicated by the emotions included in the PANAS short-form. Taken together, these results suggest that meaning-regulation attempts in particular, rather than affect-regulation in general, lie at the root of the boredom-prosocial behavior link.

Study 6: When Boredom Increases Prosocial Behavior

The results of the previous studies suggest that boredom is associated with feeling meaningless, that boredom is associated with a motivation to search for meaning, and that boredom promotes prosocial behavior, even when it is unpleasant. In Study 6 we investigated whether prosocial behavior is used as a pragmatic strategy. That is, we tested whether boredom would promote prosocial behavior a function of people’s preference for means that most likely help to re-establish a sense of meaningfulness. Similar to Study 5, we plotted two behaviors against each other. Extending Study 5, however, the only difference between these behaviors was the extent to which they were meaningful.

Generally, people prefer means that help them in their goal pursuit (i.e., instrumental means) over means that do not (i.e., non-instrumental means; for overviews see Heckhausen & Heckhausen, 2008; see also Kruglanski et al., 2002). What does this imply for the meaning-regulation process when people are bored and can engage in prosocial behavior?

Imagine that bored George wishes to regain a sense of meaningfulness and has two options: he can give money to a charity that is highly efficient in building schools in Zambia or he can give his money to a charity that is not so effective in building schools. What will give George the greatest sense of meaningfulness? Giving his money to the effective charity is more likely to give his actions a sense of meaningfulness than giving money to the relatively less effective charity. Thus, it would be especially pragmatic for
bored George to choose the activity that has the greatest benefits, in this case for other people and potentially also for his personal sense of meaningfulness. In other words, giving money to the effective charity would be instrumental for re-establishing meaningfulness, reflecting a pragmatic meaning-regulation strategy.

In the final test of our pragmatic meaning-regulation hypothesis on the increase of prosocial behavior as a function of boredom, following Spencer, Zanna, and Fong’s critical observation that underlying processes can be accurately identified by directly manipulating them (2005), we manipulated the instrumentality of charity support as means for re-establishing a sense of meaningfulness. We predicted that particularly participants under high boredom would be more selective in their actions, preferring the charity support that has the greatest potential to re-establish a sense of meaningfulness but that little bored participants would not be affected by the instrumentality of the prosocial behavior for doing something meaningful.

Method

Participants and design. Eighty-eight students (26 men, 62 women; $M_{age} = 20.69, SD = 3.95$) were randomly assigned to either one of the 4 conditions of a 2 (boredom: high vs. low) x 2 (instrumentality: high vs. low) between factorial design in exchange for course credit.

Procedure and materials. Participants were seated in cubicles and gave their informed consent. Next, participants provided demographic information and worked on a ‘square frequency estimation’ identical to Study 5. Participants in the low boredom condition performed 50 trials, whereas participants in the high boredom condition completed 100 trials. After this task, participants completed the manipulation checks. First they rated the extent to which they experienced boredom on a scale from 1 (not at all) to 7 (very much) and next they indicated the extent to which they experienced a
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sense of meaninglessness, purposelessness, senselessness, invaluableness, and insignificance on scales ranging from 1 (not at all) to 7 (very much).

After the computer task, participants received a similar description of the charity organization as in Study 3. In the low instrumentality condition we added a paragraph to the charity description stating that an independent developmental aid monitor had evaluated the project as “undoubtedly ambitious and well meant, but not very effective due to the lack of structural help and cooperation with other projects” and further stated that “Investments in such a project will for the major part be wasted due to local corruption and excessive bureaucracy.” In the high instrumentality condition, these sentences read that the project was “undoubtedly ambitious and well meant, but most of all effective due to the presence of structural help and cooperation with other projects”, and further stated that “Investments in such a project will for the major part support the foundation that is required for a better future.” Participants then indicated how much they would be willing to donate if this project was adopted. Afterwards, participants were thanked and debriefed.

Results and Discussion

On boredom. Participants’ scores on the boredom measure were entered as a dependent variable into a one-way ANOVA with the boredom induction as independent variable. Participants experienced boredom to a greater extent in the high boredom condition ($M = 6.12, SD = 0.99$) compared to participants in the low boredom condition ($M = 3.93, SD = 1.88$), $F(1, 84) = 43.72, p < .001, \eta^2 = .34$.

On meaninglessness. A one-way ANOVA with the boredom induction as independent variable and participants’ averaged scores on the meaninglessness items ($\alpha = .95$) as dependent indicated that participants in the high boredom condition experienced greater meaninglessness ($M = 5.07, SD = 1.24$) compared to participants in the low boredom condition ($M = 2.83, SD = 1.61$), $F(1, 84) = 51.53, p < .001, \eta^2 = .38$. 

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Similarly to Study 1b, we tested whether the effect of our boredom induction on participants’ sense of meaninglessness were mediated by the experience boredom. The boredom induction was dummy coded the (low boredom = 0; high boredom = 1) and entered as independent variable in a simple mediation analysis (Preacher & Hayes, 2008) with meaninglessness as dependent variable and the experienced boredom as mediator. The results confirmed the existence of a significant indirect effect of the boredom induction on meaninglessness through experienced boredom, $B = 1.16, S_e = 0.25, Z = 4.56, p < .001$. In addition, the boredom induction significantly affected experienced boredom, $B = 2.19, S_e = 0.33, t(83) = 6.61, p < .001$, experienced boredom significantly affected meaninglessness, $B = 0.53, S_e = 0.09, t(83) = 6.19, p < .001$, and the boredom induction still had a reliable effect on meaninglessness $B = 1.08, S_e = 0.32, t(83) = 3.38, p < .01$, total $R^2 = 0.58$. These results show that the increase in meaninglessness due to our boredom induction is partially mediated by the *experience* of boredom.

**Charity support.** Participants’ donations to charity were entered as a dependent variable into a two-way ANOVA with the boredom induction and the charity’s instrumentality manipulation as independent variables. This analysis revealed a non-significant main effect of instrumentality, $F(1, 81) = 1.81, p = .18, \eta^2 = .02$, and a significant main effect of the boredom induction on charity donations, $F(1, 81) = 14.05, p < .001, \eta^2 = .15$, reflecting that participants in the high boredom condition gave more to charity ($M = 11.21, SD = 10.60$) compared to participants in the low boredom condition ($M = 4.43, SD = 4.20$). Importantly, the predicted interaction effect was obtained, $F(1, 81) = 4.02, p = .05, \eta^2 = .05$.³ As reflected in Figure 5, participants were willing to donate most to an instrumental charity in the high boredom condition ($M = 13.52, SD = 12.03$) compared participants in the low boredom condition ($M = 3.83, SD = 2.14$), $t(81) = 4.19, p < .001$, compared to participants in the high boredom condition.
who considered the low instrumental charity ($M = 7.88, SD = 7.23$), $t(81) = 2.27, p = .03$, and compared to the participants who were in the low boredom low instrumentality condition ($M = 4.94, SD = 5.35$), $t(81) = 3.88, p < .001$. These latter three conditions, however, did not differ significantly from each other (all $ps > .12$).

Consistent with the hypothesis, only under both high boredom and high instrumentality of the potentially meaning-regulating behavior were people willing to donate more to the charity. Boredom thus promotes prosocial behavior, but only when behaving prosocially is a helpful means for the perception that one’s actions are meaningful. This pattern of results confirms our hypothesis that boredom promotes prosocial behavior when it is perceived as helpful to re-establish a sense of meaningfulness. On a more general level these results confirm the assumption that boredom increases behavior with potential to re-establish perceived meaningfulness because bored people are more keen to achieve this meaning-regulation goal than non-bored people.

**General Discussion**

We proposed that people who feel bored engage in prosocial behavior as a potential way to re-establish a sense of meaningfulness. Our theoretical framework was systematically tested in three stages, using both correlational and experimental designs, using various measures of prosocial behavior, and using three different manipulations of boredom.

**Boredom, Meaninglessness, and the Quest for Meaning**

In Study 1a, participants were asked to reflect on past situations where they felt bored and we compared participants’ evaluations of these situations with situations that did not entail boredom, situations that involved engagement, and situations in which sadness was present. Study 1b additionally tested participants’ experiences after they did versus did not engage in a boring task. Across both studies we found that boredom
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was associated with an increased sense of meaninglessness and this relationship could not be explained by other emotions such as sadness, anger, or frustration. The data thus suggested that meaninglessness is not a consequence of negative affect in general. Rather, the experience of meaninglessness was mediated by participants’ boredom experiences, a finding that was replicated in Study 6. These observations strongly support that when people are bored, they feel meaningless.

Given that people are motivated to maintain or establish the perception that life is meaningful (e.g., Heine et al, 2006), we investigated in Study 2 whether boredom is associated with the motivation to obtain a sense of meaningfulness. Consistent with our reasoning, the results revealed that the more participants were prone to feeling bored, the less they perceived life to be meaningful, and the more they were searching for meaning in life.

**Boredom Promotes Prosocial Behavior**

Following our pragmatic meaning-regulation hypothesis, the lack of meaning associated with boredom and the motivation to subsequently re-establish meaning should result in the promotion of responses that are perceived as potential ways for re-establishing a sense of meaningfulness – such as prosocial behavior (e.g., Caprara & Steca, 2005; Furrow, King, & White, 2004; Shek, Ma, & Cheung, 1994; see also Heine et al., 2006). The results of Study 3 supported this hypothesis: Participants were more willing to give to a charity cause when they were bored than when they were not bored (control condition). Study 4 replicated this finding by using a different boredom induction and by using decisions for blood donation as indicator of prosocial behavior.

**Pragmatic Meaning-Regulation: The Role of Instrumentality**

Study 5 and 6 extended and qualified the findings of the previous studies by investigating the strategic component of prosocial behavior as a means for re-establishing a sense of meaningfulness. In Study 5, we measured participants’
willingness to engage in meaningful but unpleasant behavior and meaningless but pleasant behavior. Consistent with our meaning-regulation framework, boredom only increased the behavior that was meaningful and did not promote merely pleasant behavior. Furthermore, no effects of our manipulation were observed on general positive and negative affect, illustrating that affect-regulation in general cannot explain why boredom promotes prosocial behavior.

In Study 6, we manipulated whether or not charity support was instrumental for the pursuit of meaningfulness. The results of this study indicate that prosocial behavior is promoted under boredom, especially when it is effective and can thus serve as means for establishing perceived meaningfulness, but not when it is not effective and thus not instrumental for the meaning-regulation goal. Taken together, we present compelling evidence for the claim that boredom is associated with feeling meaningless and that boredom promotes prosocial behavior if instrumental for the pursuit of perceived meaningfulness. Boredom effects seem thus to be specifically rooted in a meaning-regulation process.

Contributions and Novelties

Our research contributes to different areas of research: boredom, meaning-regulation, and prosocial behavior. Social psychological research on boredom is very young and few studies have addressed the consequences of a state of boredom. Note that boredom has been linked to self-regulatory strategies of pursuing interesting and fun activities while people engage in boring tasks (e.g., Sansone et al., 1992; Smith et al., 2009). On two levels our research differs from this notion. Our research demonstrates that the effect of boredom on self-regulation lasts beyond the boring activity itself. In the current studies, donating to charity or signing up for blood donations could not have increased the level of stimulation, interest, arousal, novelty, fun, or challenge experienced of the boring activity simply because the boring activity
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finished before prosocial behavior was assessed. Therefore, we show that boredom affects attitudes and behavior even after the boring activity, if people have not had the chance to re-establish meaningfulness. In addition, we showed that the effectiveness of prosocial behavior moderated the impact of boredom (Study 5 & 6). This effect can hardly be explained by the assumptions that boredom generally increases engagement in interesting or fun activities, but it is highly consistent with our meaning-regulation hypothesis.

In addition to the above, our research is novel as it focuses on the existential threat that boredom can impose. An impressive amount of research now charts the effects of existential threats on meaning-regulation – such as mortality salience (e.g., Greenberg et al., 2004), uncertainty (e.g., Van den Bos, 2001), and ostracism (Case & Williams, 2004) – but treating the mundane experience of boredom as a meaning-threat that motivates meaning-regulation is relatively new. Importantly, people’s attempts to attain a sense of meaningfulness have been found to affect such a wide area of behaviors and attitudes that Heine and colleagues (2006) referred to the meaning maintenance process as “inexhaustible,” “innate,” and “automatic” (p. 91). Our finding that the experience of boredom affects a central part of human existence is intriguing and holds great potential for understanding how people engage in their ‘quest for meaningfulness’ on an everyday basis.

Besides the value of our research for the psychology of boredom and meaning-regulation, our research adds to the understanding of the functions that prosocial behaviors can fulfill. Paradoxically, our research shows that the aversive experience of boredom can promote ‘positive’ social behavior. Being bored may be miserable, but at the same time it provides benefits for others who are in need of support. This is important as past boredom (proneness) research mainly suggested detrimental correlates such as aggression or pathological gambling. Consistent with past research (Caprara &
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Steca, 2005; Furrow et al., 2004; Jonas et al., 2002; Shek, et al., 1994; see also Heine et al., 2006; Joireman & Duell, 2005; 2007), our research suggests that one of the values of prosocial behavior lies in its meaning-regulating potential: prosocial behavior provides opportunities that may reduce negative consequences of a lack of meaning in life.

Limitations and Future Directions

Past boredom research has made the observation that components of feeling bored is being unchallenged (e.g., Csikszentmihalyi, 1990), being deprived from stimulation (e.g., Eastwood, Cavaliere, Fahlman, & Eastwood, 2006), or having a lack of interest (e.g., Sansone et al., 1992). Not surprisingly, boredom proneness has been found to be related to sensation seeking and this has been offered as a (partial) explanation of the link between boredom proneness and correlates as anger, aggression, and gambling (e.g., Blaszczynski, McConaghy, & Frankova, 1990; Dahlen, Martin, Ragan, & Kuhlman, 2004; Rupp & Vodanovich, 1997). Our research did not specifically focus on the sensation seeking aspect but rather on the meaning re-establishment aspect of boredom. It appears that boredom promotes meaningful responses that do not involve a clear increase in stimulation (e.g. charity support). Nevertheless, by identifying the meaning re-establishment motive associated with boredom we can understand better what kind of stimulation is sought when bored. For example, why would people turn to gamble or aggression rather than simply jump in circles as a much easier way of stimulation? This may be because jumping in circles is (for most people) quite meaningless, whereas aggression can sometimes also serve as a source of meaningfulness (e.g., McGregor, Lieberman, Greenberg, Solomon, Arndt, Simon, & Pyszczynski, 1998) and regarding gambling, Barbalet suggested that “By focusing their involvement on the positive attributes of betting ‘skill’ or ‘luck’, the gambler constructs a meaning over otherwise empty time” (1999, p. 642). It may hence
be that the specific type of sensation seeking due to boredom is qualified by a meaning re-establishment motive.

**Conclusions**

The current research investigated the assertion that boredom makes people feel meaningless, that it motivates people to re-establish meaning, and that it promotes prosocial behavior. Throughout a series of seven studies we obtained evidence for this claim with a variety of boredom manipulations and by manipulating the meaning-regulation process. These results imply that filling in 23 forms on one day may not necessarily make George bang his head on the table or torch the forms in a destructive act, but it may make him help the shivering homeless sitting in front of his grocery store, potentially aiding George in his quest for life’s meaningfulness. Of course, this does not mean that boredom is necessary for prosocial behavior. It is one positive effect of an utterly negative experience, demonstrating the dynamic character of how people attempt to re-establish a sense of meaningfulness.


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Prior to analyses, outliers were excluded based on the criteria proposed by Tabachnick and Fidell (2000). Five participants were excluded in Study 1a, none in Study 1b, none in Study 2, none in Study 3, 3 in Study 4, none in Study 5, and 4 in Study 6.

A t-test with corrections for the unequal standard deviations yielded similar results, $t(20.51) = 2.83, p = .01, d = 1.25$.

Contrast analyses with corrections for the unequal standard deviations yielded similar results: a main effect of boredom, $t(46.47) = 3.82, p < .001, d = 1.13$, a non-significant main effect of instrumentality, $t(46.47) = 1.37, p = .18, d = 0.40$, and the critical significant interaction, $t(46.47) = 2.04, p = .05, d = 0.60$. 
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Figure 1a: Boredom as a Function of Recalled Experience (Study 1a).

Figure 1b: Sadness as a Function of Recalled Experience (Study 1a).
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Figure 2a: Meaninglessness of the Situation as a Function of Recalled Experience (Study 1a).

Figure 2b: Experienced Meaninglessness as a Function of Recalled Experience (Study 1a).
Figure 3: Multiple Mediation Model on Boredom and Meaninglessness (Study 1b).
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Figure 4a: Willingness to Engage in Two Behaviors as a Function of Boredom (Study 5).

Figure 4b: Amount of Days and Minutes That Participants Were willing to Engage in Two Behaviors as a Function of Boredom (Study 5).

Figure 5: Charity Support as a Function of Boredom and Instrumentality (Study 6).


CHAPTER 6

IN SEARCH OF MEANINGFULNESS:

USING NOSTALGIA AS AN ANTIDOTE TO BOREDOM
In Search of Meaningfulness: Using Nostalgia as an Antidote to Boredom

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CHAPTER 6 – BOREDOM AND NOSTALGIA

Abstract

We formulated and tested, in 10 studies, a theoretical model according to which individuals use nostalgia as a way to re-inject meaningfulness in their lives when they experience boredom. Studies 1-3 established that induced boredom causes increases in nostalgia. Studies 4-8 demonstrated that induced boredom reduces meaning, meaning reduction elicits nostalgia, and nostalgia elevates meaningfulness. Finally, Study 9 showed that dispositional search for meaning mediates the effect of dispositional boredom on dispositional nostalgia, whereas Study 10 showed that nostalgia mediates the effect of induced boredom on meaningfulness. Besides supporting the theoretical model, the findings suggest that even mundane activities can trigger existential regulatory mechanisms. Also, the findings have theoretical and practical implications.

Keywords: Boredom, nostalgia, meaning, self-regulation, memory
“Zero, one, two, four, seven, two, four, six, two, six. Ten variables done, 42 to go, and then repeat the whole thing over for another 104 participants.” This sentence captures one of the less intellectually exciting but nevertheless common thoughts that you may have while conducting research. Entering data is a boring activity, and is certainly not the reason why you stayed inside studying for hours on end while other students were out and about enjoying their university years. In fact, entering data might as well be at the top tier of “dull academic tasks” (barring committee work). Sitting at your computer desk and overwhelmed by boredom, you may desperately try to convince yourself that data entry will help you achieve great things in the long run—publications, international recognition of your genius, and that elusive APA award—but such rationalizations may go largely in vain. Repetitively pressing keyboard numbers robs life of its meaning. You decide to take a break.

You yawn, lean back for a second, and escape into the past. You see yourself back in the good old days—playing hide and seek in the yard, kissing your sweetheart for the first time, sitting on Santa’s knee while receiving your first issue of *JPSP* for Christmas. An intense feeling of nostalgia takes hold of you, as you ponder memories of a past world that still made sense. “Silly thoughts: Stop mocking around and get back to work!” your inner grown-up voice might retort, but we argue instead that this reverie is not silly at all. Indeed, we propose that nostalgic evocation of the past reflects attempts to re-establish meaningfulness when bored. We begin with a brief review of the literature on boredom.

**Boredom**

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

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

Importantly, though, boredom does not straightforwardly equate with negativity, with low arousal, or with lack of challenge, interest, fun, and stimulation. Rather, boredom is a distinct, multifaceted experience. The distinct (compared, for example, to sadness) emotional signature of boredom is reflected in several domains such as affect, cognition, motivation, and action tendencies (Smith & Ellsworth, 1985; Van Tilburg & Igou, in press-a; see also Barbalet, 1999; Vodanovich, 2003; Wallbott, 1998). One of the unique features of boredom is that it can motivate people toward turning a dull task into an interesting one (Sansone, 1992) or a fun one (Smith et al., 2009). Bored people feel restless and unchallenged; they think their current situation serves no purpose, and they prefer to engage in behavior that they find meaningful (Van Tilburg & Igou, in press-a).

Finding meaning in activities or, more generally, viewing life as meaningful has beneficial consequences. It is associated, for example, with increases in work enjoyment, happiness, or life satisfaction, and with decreases in depression, anxiety, or
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substance abuse (Bonebright, Clay, & Ankermann, 2000; Chamberlain & Zika, 1988; Debats, Van der Lubbe, & Wezeman, 1993; Harlow, Newcomb, & Bentler, 1986; see also Steger, Frazier, Oishi, & Kaler, 2006). It is no surprise, then, that people are fundamentally motivated to maintain a sense of meaningfulness (Greenberg, Koole, & Pyszczynski, 2004; Heine, Proulx, & Vohs, 2006). Past research has established that boredom triggers meaning re-establishment strategies that pertain both to the specific activity on hand and the ensuing cognition or behavior (e.g., increased social identification and prosociality; Van Tilburg & Igou, 2011a; in press-b). In sum, boredom is a distinct and multifaceted experience that entails a strong motivation to engage in search for meaning. We propose that boredom can therefore provoke nostalgia, an important source of meaning (Routledge, Sedikides, Wildschut, & Juhl, in press; Sedikides, Wildschut, & Baden, 2004). To explicate this relation, we briefly review literature on nostalgia.

Nostalgia

Historically, nostalgia has been regarded a brain disease or psychiatric disorder (Sedikides, Wildschut, Arndt, & Routledge, 2006; Sedikides, Wildschut, Gaertner, Routledge, & Arndt, 2008). Recently, however, the construct has been rehabilitated. Nostalgia is a universal (Hepper, Ritchie, Sedikides, & Wildschut, in press; Hepper et al., 2011) and commonly felt (Boym, 2001; Wildschut, Sedikides, Arndt, & Routledge, 2006) emotion. It is bittersweet, albeit predominantly positive; it typically refers to momentous occasions of one’s life; and it involves the self in relation to valued others (Barrett et al., 2010; Sedikides, Wildschut, Arndt, & Routledge, 2008; Wildschut et al., 2006).

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

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

The Current Research: Nostalgia as Source of Meaning at Times of Boredom

Boredom begets a sense of meaninglessness and prompts a search for meaning (Van Tilburg & Igou, 2011a, in press-a, b). Nostalgia, set off by aversive conditions including existential threats, constitutes an important source of meaning (Juhl et al., 2010; Routledge et al., in press; Sedikides et al., 2004). Based on these empirical findings, we propose a theoretical model in which boredom—an aversive condition and existential threat—leads to a search for meaning, which triggers nostalgia; nostalgia, in
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turn, fosters a sense of meaningfulness and presence of meaning in one’s life. We test this meaning-regulation process in 10 studies.

Our theoretical model consists of three steps, which we evaluate in corresponding blocks of studies. We depict the model and its steps in Figure 1. The steps reflect different, yet compatible and supplementary, research traditions. The first step follows the tradition of laboratory experimentation (Wilson, Aronson, & Carlsmith, 2010). Here (Studies 1-3; Effect), we examine the causal relation between boredom and nostalgia (i.e., felt nostalgia, nostalgic memories). The second step follows the tradition of establishing a causal chain (Spencer, Zanna, & Fong, 2005). Here (Studies 4-8; Process Causality), we examine the stepwise causal sequence of the meaning-regulation process; in particular, we assess whether boredom reduces meaning (Studies 4-5), whether meaning reduction elicits nostalgia (Study 6), and whether nostalgia elevates meaningfulness (Studies 7-8). The third and final step follows the tradition of mediation (MacKinnon, Fairchild, & Fritz, 2007). Here (Studies 9-10; Mediation), we provide a direct (i.e., mediational) test of the proposed sequence of the meaning-regulation process; in particular, we assess whether search for meaning mediates the effect of boredom on nostalgia (Study 9), and whether nostalgia mediates the effect of boredom on sense of meaningfulness and presence of meaning in life (Study 10). In combining these distinct research traditions, we aimed to achieve converging evidence for our theoretical model.

In all reported studies, participants were University of Limerick undergraduate student volunteers, with the exception of Study 3 in which they were Limerick community members. All participants were tested in the laboratory, were debriefed thoroughly at the end of the experimental procedure, and were rewarded with confectionary. We begin with an examination of the causal link between boredom and nostalgia (Studies 1-3; Figure 1, Effect; Wilson et al., 2010).
In Study 1, we forayed into the intricacies of the causal connection between boredom and nostalgia. Specifically, we tested the idea that boredom elicits felt nostalgia. We manipulated boredom and then asked participants to retrieve a memory. We instructed half of the participants to retrieve an unspecified memory (i.e., past event) and the other half to retrieve a nostalgic memory (i.e., nostalgic event). We hypothesized that high (vs. low) boredom would engender the feeling of nostalgia when participants retrieved an unspecified memory; that is, highly bored participants would use this cognitive “elbow room” to retrieve spontaneously a memory that made them feel nostalgic, whereas little bored participants would be less inclined to do so. However, this effect (i.e., difference between high and little bored participants on felt nostalgia) would be cancelled out when participants specifically and restrictively retrieved a nostalgic memory; in this case, we would observe a ceiling effect.

**Method**

**Participants and design.** We randomly assigned 102 participants (60 men, 42 women, $M_{age} = 21.16, SD_{age} = 5.09$) to the conditions of a 2 (boredom: high, low) x 2 (memory: unspecified, nostalgic) between-subjects design.

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

**Results**

**Task boredom manipulation check.** We entered participants’ responses to the task boredom item into a one-way Analysis of Variance (ANOVA), with boredom as the independent variable. Participants in the high boredom condition (\(M = 6.47, SD = .79\)) found the task more boring than those in the low boredom condition (\(M = 5.69, SD = 1.32\)), \(F(1, 98) = 12.82, p = .001, \eta^2 = .12\), indicating that the manipulation was effective.

**Felt nostalgia.** We averaged responses to the two nostalgia items (\(r = .88, p = .001\)) and entered the composite into a two-way ANOVA. The boredom main effect was not significant, \(F(1, 96) = 1.87, p = .17, \eta^2 = .02\). The memory main effect was significant, \(F(1, 96) = 3.84, p = .05, \eta^2 = .04\): participants felt more nostalgic in the nostalgic memory condition (\(M = 4.03, SD = 1.36\)) than in the unspecified memory condition (\(M = 3.49, SD = 1.43\)). Crucially, the interaction was significant, \(F(1, 96) = 4.29, p = .04, \eta^2 = .04\). When they retrieved an unspecified memory, participants in the high boredom condition felt more nostalgic (\(M = 3.96, SD = 1.37\)) than those in the low boredom condition (\(M = 3.02, SD = 1.36\)), \(t(96) = 2.54, p = .01, d = 0.52\). However, when they retrieved a nostalgic memory, participants in the high boredom condition (\(M = 3.93, SD = 1.80\)) and those in the low boredom condition (\(M = 4.13, SD = 0.98\)) did not differ on felt nostalgia, \(t(96) = 0.48, p = .63, d = 0.10\).
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Discussion

We examined whether boredom spawns nostalgia. Consistent with the hypothesis, highly (compared to little) bored participants reflected on an event that made them feel nostalgic, but only when they had the opportunity to choose the event (i.e., only when they could retrieve an unspecified past event). When participants were restricted in reflecting on a nostalgic event, this pattern was cancelled out (i.e., ceiling effect). The findings suggest that boredom is spontaneously implicated in the production of felt nostalgia.

Study 2: Boredom Promotes Nostalgia Independently of Sadness

Study 1 showed that engagement in a boring activity boosts nostalgia. In Study 2, we extended this finding in two ways. First, we used a different boredom manipulation task for generalizability purposes. Second, we were concerned with the possibility that the boring task might elicit sad mood. According to our reasoning, nostalgia is a result of boredom, not of sad mood. Yet, negative state relief and mood-enhancement propositions (Cialdini, Schaller, Houlihan, Arps, Fultz, & Beaman, 1987; Handley & Lassiter, 2002; Isen, Shalker, Clark, & Karp, 1978; Sedikides, 1992, 1994) advocate that, when experiencing sad mood, people often seek to alleviate it by capitalizing on sources of positive affect. Nostalgia qualifies for such a source (Barrett et al., 2010; Wildschut et al., 2006). We aimed, then, to verify that the effect of the boring task on felt nostalgia is independent of sad mood. Otherwise, Study 2 tested the same hypothesis as Study 1, using only the unspecified memory condition.

Method

Participants and design. We randomly assigned 42 participants (24 men, 18 women, \( M_{\text{age}} = 24.52, SD_{\text{age}} = 4.90 \)) to the conditions of a one-factor design (boredom: high, low).
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Procedure and materials. We manipulated boredom after a procedure introduced by Van Tilburg and Igou (in press-b). Participants carefully traced a line through either 3 (low boredom condition) or 9 (high boredom condition) large spirals. Next, participants filled out the same task boredom manipulation check as in Study 1. Subsequently, participants responded to an assessment of sad mood: “To what extent did the task you just completed make you feel sad?” (1 = not at all, 7 = very much). Afterwards, participants retrieved an unspecified memory, as per the relevant condition of Study 1. Finally, participants completed the same measure of felt nostalgia as in Study 1.

Results

Task boredom manipulation check. We entered participants’ responses to the task boredom item into an ANOVA. Attesting to the effectiveness of the manipulation, high boredom participants (M = 4.50, SD = 2.00) found the task more boring than their low boredom counterparts (M = 3.32, SD = 1.84), F(1, 40) = 4.07, p = .05, η² = .09.

Experienced sadness. We entered participants’ responses to the sadness item into an ANOVA. Participants in the high boredom condition (M = 1.35, SD = 0.81) and low boredom condition (M = 1.27, SD = 0.77) did not differ significantly on sadness, F(1, 40) = 0.10, p = .75, η² = 0.00.

Felt nostalgia. We averaged responses to the two nostalgia items (r = .93, p = .001) and entered the composite into an ANOVA. When retrieving an unspecified memory, participants in the high boredom condition (M = 4.18, SD = 1.24) felt more nostalgic than participants in the low boredom condition (M = 3.02, SD = 1.36), F(1, 40) = 5.21, p = .03, η² = .12.

Discussion

We tested the hypothesis that boredom begets nostalgia, using a new boredom task. Following induction of boredom, participants brought to mind, and wrote about, an
unspecified memory. In replication of Study 1 and consistent with the hypothesis, highly (compared to little) bored participants opted to reflect on a memory that made them feel nostalgic. This results pattern is not attributable to sadness, as the boredom task did not stir sadness.

**Study 3: Boredom Promotes Nostalgic Feelings and Memories**

Studies 1-2 revealed that, when bored, people use their memories in such a way as to feel nostalgic. Following boredom induction, these studies gauged the extent to which participants regarded the task as boring. The studies, however, did not assess whether participants experienced boredom. Study 3 addressed this limitation by assessing directly the experience of boredom as a result of task involvement. In addition, Studies 1-2 assessed nostalgic feelings as stemming from reflection on a (seemingly nostalgic) event. However, they did not assess participants’ perceptions of their reflection as nostalgic. Study 3 addressed this limitation by assessing directly participants’ perceptions of the degree to which their memory was nostalgic. In all, Study 3 tested the hypothesis that a task that is perceived and experienced as boring will augment felt nostalgia stemming from a nostalgic memory.

**Method**

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

**Procedure and materials.** We manipulated boredom as in Study 2 (i.e., with the line tracing procedure; Van Tilburg & Igou, in press-b). Subsequently, participants responded to two boredom manipulation check items ($1 = not at all, 7 = very much$). One item referred to the task (“To what extent was the task you just completed boring?”) and another to the relevant experience (“Are you experiencing boredom?”). Next, participants retrieved an unspecified memory, as in Study 2. Finally, they
completed the dependent measures (1 = strongly disagree, 6 = strongly agree).

Specifically, they indicated the extent to which their memory was nostalgic (“This memory is nostalgic”) and, as in prior studies, rated their felt nostalgia (“Right now, I am feeling quite nostalgic,” “Right now, I’m having nostalgic feelings”).

Results

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

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

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

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

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

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

**Discussion**

Study 3 replicated and extended the results of the previous two studies. The experimental task was not only perceived as boring but also resulted in the experience of boredom. Furthermore, the task not only triggered felt nostalgia but also led to the perception of the corresponding memory as nostalgic. In all, Study 3 validated the previously reported findings in providing support for the hypothesis that boredom causes increases in nostalgia. In all, Studies 1-3 showed that bored individuals retrieve memories that are, and make them feel, nostalgic (Figure 1, *Effect*; Wilson et al., 2010).

**Study 4: Boredom Breeds Meaninglessness**

What is the nature of the meaning-regulation process that underlies the effect of boredom on nostalgia? We argue that boredom is a meaning-denying experience, which motivates individuals to strive toward re-establishing a sense of meaningfulness. To do so, individuals resort to nostalgic memories and feelings, which in turn increase meaningfulness. We depict the causal steps of this meaning-regulation process in Figure 1 (*Process Causality*; Spencer et al., 2005) and test it in Studies 4-8.

The proposed meaning-regulation process builds on past literature. Research employing a variety of boredom inductions and assessments has shown that bored individuals feel meaningless (Van Tilburg & Igou, 2011a; in press-a, b) and subsequently engage in meaning-regulation efforts in the form of prosocial behaviors (Van Tilburg & Igou, 2011a), ingroup valuation, and outgroup devaluation (Van Tilburg & Igou, in press-b). In addition, research has shown that existential threats elicit nostalgia, that nostalgia increases meaningfulness (Routledge et al., in press), and that nostalgia buffers against meaning threats such as mortality salience (Routledge et al., 2008).
In Study 4, we conducted a preliminary test of the proposed meaning-regulation process by examining whether boredom is a meaning-denying experience. We hypothesized, in particular, that boredom will lead to a state of meaninglessness. Importantly, though, we aimed to specify the effects of boredom on meaninglessness. Thus, we tested whether boredom induces not only meaninglessness (as hypothesized) but also sad mood (and forms of discrete affect such as anger and frustration), low self-esteem, and loneliness. These are not trivial alternatives. Anger and frustration are known correlates of boredom (Van Tilburg & Igou, in press-a). Also, the meaning-regulation process with which we concerned is linked to nostalgia, and nostalgia in turn has been linked to increased mood (Bartlett et al., 2010; Wildschut et al., 2006), higher self-esteem (Vess et al., in press; Wildschut et al., 2006), and lowered loneliness (Wildschut et al., 2011; Zhou et al., 2008).

**Method**

**Participants and design.** We randomly assigned 38 participants (27 men, 9 women; $M_{age} = 22.08, SD_{age} = 3.98$) to the conditions of a one-factor design (boredom: high, low).

**Procedure and materials.** The boredom manipulation, as well as the manipulation checks, were identical to those of Study 3. Afterwards, participants indicated (in stated order) the extent to which they experienced meaninglessness (“I experience a sense of meaninglessness”), and the extent to which they felt sadness (“I feel sad”), loneliness (“I feel lonely”), low self-esteem (“I feel that I have low self-esteem”), anger (“I feel angry”), and frustration (“I feel frustration). Participants responded to all these items on a 7-point scale (1 = not at all, 7 = very much).

**Results**

**Manipulation checks.** Responses to the two manipulation check items were correlated ($r = .72, p = .001$).
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Task boredom. We entered responses to the task boredom item into an ANOVA. As in prior studies, participants in the high boredom condition ($M = 5.05$, $SD = 1.62$) perceived the task as more boring than participants in the low boredom condition ($M = 3.42$, $SD = 1.22$), $F(1, 36) = 12.37$, $p = .001$, $\eta^2 = .26$.

Experienced boredom. We entered responses to the experienced boredom item into an ANOVA. As in Study 3, participants in the high boredom condition ($M = 4.33$, $SD = 1.61$) experienced more boredom compared to their low boredom counterparts ($M = 3.11$, $SD = 1.41$), $F(1, 35) = 6.12$, $p = .02$, $\eta^2 = .15$ (Figure 2).

Experienced meaninglessness. We entered responses to the experienced meaninglessness item into an ANOVA. Consistent with the hypothesis, participants in the high boredom condition ($M = 4.32$, $SD = 2.14$) experienced higher levels of meaninglessness compared to participants in the low boredom condition ($M = 2.89$, $SD = 1.88$), $F(1, 36) = 4.73$, $p = .04$, $\eta^2 = .12$ (Figure 2).

Mood, self-esteem, loneliness, anger, and frustration. We conducted five ANOVAs on sad mood, low self-esteem, loneliness, anger, and frustration. No significant effects emerged, all $ps > .30$ (Figure 2).

Discussion

In Study 4, we began to test the proposed meaning-regulation process by examining whether boredom breeds meaninglessness. It did. More importantly, the effects of boredom were specific to meaninglessness: Boredom did not lead to sad mood, anger, frustration, low self-esteem, or loneliness.

Study 5: Boredom Instantiates a Search for Meaning

Having shown that boredom involves meaninglessness, we continued, in Study 5, to assess the proposed meaning-regulation process (*Process Causality*). Specifically, we hypothesized that boredom instantiates a search for meaning: boredom motivates individuals to do something meaningful. This is an important extension of the previous
studies as, according to the meaning-regulation process, it is the motivation to re-establish meaningfulness that promotes nostalgia.

Method

Participants and design. We randomly assigned 41 participants (32 women, 9 men; $M_{age} = 19.12, SD_{age} = 1.94$) to the conditions of a one-factor design (boredom: high, low).

Procedure and materials. The boredom manipulation was the reference copying task of Study 1. The boredom task manipulation check was identical to that of previous studies. Finally, participants indicated (1 = not at all, 7 = very much) the extent to which they would like to do something “meaningful,” “purposeful,” “of significance,” “that makes sense,” and “valuable.” This 5-item scale was validated by Van Tilburg and Igou (2011a).

Results and Discussion

Task boredom manipulation check. In replication of prior studies, participants in the high boredom condition ($M = 6.50, SD = 0.71$) considered the task to be more boring than those in the low boredom condition ($M = 5.09, SD = 1.65$), $F(1, 39) = 11.51, p = .01, \eta^{2} = .23$.

Meaning re-establishment. We averaged the five items assessing motivation to engage in meaningful behavior ($\alpha = .92$) and entered the composite into an ANOVA. Participants in the high boredom condition ($M = 6.83, SD = .33$) were more strongly motivated to engage in a meaningful activity compared to participants in the low boredom condition ($M = 6.31, SD = 0.75$), $F(1, 37) = 5.89, p = .02, \eta^{2} = .14$. Consistent with the hypothesis, boredom amplified participants’ motivation for meaning re-establishment through suitable action.
Study 6: Nostalgia Increases as a Result of Meaning Threat

We showed in the prior study that boredom strengthens motivation to engage in meaningful action. In Study 6, we provided another test of the meaning-regulation process (Process Causality). In particular, we introduced a threat to life’s meaningfulness and assessed the ensuing level of nostalgia. We hypothesized that nostalgia would increase as a result of this direct meaning threat.

Method

Participants and design. We randomly assigned 40 participants (24 women, 16 men; $M_{\text{age}} = 23.88$, $SD_{\text{age}} = 7.28$) to the conditions of a one-factor design (essay: meaning threat, no meaning threat).

Procedure and materials. We manipulated meaninglessness with a procedure introduced by Routledge and colleagues (in press; see also Park, 2001). Participants were presented with a text written by “Dr. James Park.” In the meaning threat condition, the essay communicated that human life is meaningless. An excerpt from this essay read:

There are approximately 7 billion people living in the world. So take a moment to ponder the following question: In the grand scheme of things, how significant are you? The Earth is 5 billion years old, and the average human lifespan across the globe is 68 years. These statistics serve to emphasize how our contribution to the world is paltry, pathetic, and pointless. What is 68 years of one person’s rat-race compared to 5 billion years of history? We are no more significant than any other form of life in the universe.

Participants in the no threat condition were presented with an essay (of similar length and structure) about computers allegedly written also by “Dr. James Park.” An excerpt from this essay read:
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Computers are able to recognize, remember, store, and manipulate many forms of abstract symbols, including every human language and the special mathematical languages of the sciences. In fact, the words you are looking at right now, were put through a machine which stored them electronically and which allowed, me the author, to manipulate them several times before they were finally printed out by another machine.

Finally, participants indicated how nostalgic they felt (1 = strongly disagree, 6 = strongly agree) on the same two items we used in prior studies: “Right now, I am feeling quite nostalgic” and “Right now, I’m having nostalgic feelings.”

Results and Discussion

We averaged responses to the two items (r = .95, p = .001) and entered the composite into an ANOVA. Participants in the meaning threat condition (M = 3.05, SD = 1.47) felt more nostalgic than participants in the no threat condition (M = 2.18, SD = 1.16), F(1, 38) = 4.21, p = .05, η² = .10. As hypothesized, a threat to life’s meaning provoked nostalgia (consistently with Routledge et al., in press).

Study 7: Nostalgia Increases Recall of Meaning-Related Concepts

We demonstrated, in Study 6, that nostalgia increases as a result of threat to life’s meaningfulness. We proceeded with additional tests of the meaning-regulation process (Process Causality) by examining, in Studies 7 and 8, whether nostalgia elevates meaningfulness. To do so, we relied, in Study 7, on a procedure validated by Van Tilburg & Igou (2011b). Past research has showed that the emotion of happiness and sadness increase the accessibility of emotion-related words (i.e., happy and sad words, respectively) but not of emotion-unrelated words (Niedenthal & Halberstadt, 1997). Based on these findings, we propose that the emotion of nostalgia will heighten the accessibility of meaning-related concepts, given that we assume nostalgia to be related to meaning. In turn, newly presented meaning-related words (but not neutral
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words) will be assimilated into the meaning-related concepts that had been rendered accessible by nostalgia (Higgins, 1996; Sedikides & Skowronski, 1991; Vess et al., in press). As a result, newly presented meaning-related words will be recalled better than newly presented neutral words.

Method

Participants and design. We randomly assigned 73 participants (29 men, 44 women; $M_{age} = 21.90$, $SD = 4.35$) to the conditions of a one-factor design (event: nostalgic, ordinary autobiographical).

Procedure and materials. The procedure consisted of three parts: the nostalgia manipulation phase, the word exposure phase, and the word retrieval phase. We randomized the order of the first two phases.

Nostalgia manipulation phase. We induced nostalgia with a manipulation introduced by Wildschut and colleagues (2006, Study 5). Participants in the experimental condition reflected upon a nostalgic event from their lives, listed four relevant keywords, and then described in writing the event and how it made them feel. Participants in the control condition followed the same procedure but for an ordinary event from their lives. Next, all participants completed the same assessment of nostalgia (i.e., manipulation check) as in prior studies: “Right now, I am feeling quite nostalgic” and “Right now, I’m having nostalgic feelings” (1 = strongly disagree, 6 = strongly agree).

Word exposure phase. We asked participants to open a white envelope containing a sheet with 21 words. Seven of these words were meaning-related (i.e., “purpose,” “sense,” “value,” “belief,” “worth,” “goal,” “meaning”) and 14 words were neutral or meaning-unrelated (e.g., “table,” “hairdryer,” “color”). To avoid the possibility that participants would detect a pattern, we ensured that (1) most meaning-related words were followed by one or two neutral words, and (2) the first and last word
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on the list were always neutral. We instructed participants simply to copy each word on an adjacent line. We did so in order to maximize the possibility that they would read the words carefully; however, we did not inform participants that they would later be asked to recall the words. After copying each word, participants placed the sheet in a brown envelope and sealed it. Participants who had completed the nostalgia manipulation phase prior to the word exposure phase worked on a filler task (i.e., reading an unrelated text) before proceeding to the word retrieval phase. We did this in order to equalize for all participants the time span between the word exposure phase and the word retrieval phase. A preliminary analysis revealed no main or interaction effects involving this order variable (all ps > .21).

**Word retrieval phase.** Participants received a list with 21 blank spaces and were instructed to recall as many words as possible from the ones they had copied earlier.

**Results**

**Nostalgia.** We entered the nostalgia composite \( r = .92, p = .001 \) into an ANOVA. Participants in the nostalgic event condition \( M = 4.44, SD = 1.36 \) felt more nostalgic compared to those in the ordinary event condition \( M = 2.97, SD = 1.49 \), \( F(1, 71) = 19.27, p = .001, \eta^2 = .21 \). The nostalgia manipulation was effective.

**Recall.** First, we standardized the number of neutral and meaning-related words that participants retrieved in order to correct for differences in standard deviations between the two word types—differences due to the uneven number of neutral and meaning words presented. Next, we conducted a two-way mixed-model ANOVA with word type (meaning vs. neutral) as a within-subjects factor, event (nostalgic vs. ordinary autobiographical) as a between-subjects factor, and amount of recalled words as the dependent measure. As depicted in Figure 3, this analysis produced no main effect of word type \( (F < 1) \) and also no main effect of event \( (F < 1) \). Importantly, though, the critical interaction was significant, \( F(1, 71) = 7.22, p = .01, \eta^2 = .09 \). We followed up
with analytic comparisons. Participants in the nostalgic event condition ($M = 0.22, SD = 1.08$) recalled more meaning-related words than participants in the ordinary autobiographical memory condition ($M = -0.26, SD = 0.83$), $F(1, 71) = 4.32, p = .04, \eta^2 = .06$. However, participants in the two conditions did not differ significantly in amount of recall for neutral words, $F(1, 71) = 1.33, p = .25, \eta^2 = .02$.²

Discussion

We proposed, in the current study, that nostalgia heightens the accessibility of meaning-related concepts (Niedenthal & Halberstadt, 1997; Van Tilburg & Igou, 2011b), and that, during nostalgic reverie, newly presented meaning-related (but not neutral) words will be assimilated into meaning-related concepts previously activated by nostalgia (Higgins, 1996; Sedikides & Skowronski, 1991; Vess et al., in press). We proceeded to hypothesize that participants will recall better newly presented meaning-related words compared to neutral words. The results were consistent with the hypothesis: nostalgia elevates meaningfulness though selective recall.

Study 8: Nostalgia Augments a Sense of Meaningfulness

The previous study demonstrated that nostalgic reflection increases recall of meaning-related concepts. But does nostalgic reverie also increase subjective meaningfulness (i.e., extent to which people experience a sense of meaningfulness)? We hypothesized so and tested this hypothesis in Study 8.

Method

Participants and design. We randomly assigned 42 participants (28 women, 14 men; $M_{age} = 19.50, SD_{age} = 4.63$) to the conditions of a one-factor design (event: nostalgic, ordinary autobiographical).

Procedure and materials. We induced nostalgia with a validated manipulation (Routledge et al., in press; Wildschut et al., 2006; Zhou et al., 2008). Participants in the experimental condition reflected upon a nostalgic event from their lives and then simply
listed four relevant keywords. Participants in the control condition followed the same procedure but for an ordinary event. Next, all participants completed the manipulation check (“Right now, I am feeling quite nostalgic,” “Right now, I’m having nostalgic feelings”; 1 = strongly disagree, 6 = strongly agree). Finally, participants completed a measure of meaningfulness (Van Tilburg & Igou, 2011a). In particular, they indicated the extent to which they experienced a sense of meaningfulness, purposefulness, significance, sensefulness, and valuableness (1 = not at all, 7 = very much).

Results and Discussion

Nostalgia. We entered the nostalgia composite (r = .88, p = .001) into an ANOVA. Participants in the nostalgic event condition (M = 4.61, SD = 0.98) felt more nostalgic than those in the ordinary autobiographical event condition (M = 3.45, SD = 1.56), F(1, 39) = 8.46, p = .01, η² = .18, attesting the effectiveness of the nostalgia manipulation.

Meaningfulness. We averaged the five meaningfulness items (α = .91) and entered the composite into an ANOVA. Participants in the nostalgic event condition (M = 3.96, SD = 0.48) experienced a greater sense of meaningfulness than participants in the ordinary autobiographical event condition (M = 3.01, SD = 1.23), F(1, 40) = 11.37, p = .01, η² = .22. Consistent with the hypothesis (and past research; Routledge et al., in press), nostalgic reverie fosters a sense of meaningfulness.

Study 9: Search for Meaning Mediates the Link between Boredom and Nostalgia

Studies 1 through 3 established that boredom promotes nostalgia (Effect; Wilson et al., 2010). Studies 4 through 8 validated each of the causal steps in the meaning-regulation process (Process Causality; Spencer et al., 2005). Studies 9 and 10 aimed to provide a direct (i.e., mediational) test of the proposed sequence of the meaning-regulation process (Mediation; MacKinnon et al., 2007). (See Figure 1.)
The vast majority of the boredom literature has focused on dispositional boredom. With the aim to integrate our research better with past literature, we examined the link between boredom and nostalgia at the dispositional level. In particular, we tested in Study 9 whether, at the dispositional level, search for meaning mediates the effect of boredom on nostalgia. Consistent with evidence for causal ordering of the meaning-regulation process identified in Studies 4-6, we hypothesized that individuals engage in nostalgic reflection in an attempt to find meaning in life when bored. Stated otherwise, frequently bored individuals would be motivated to search for meaning in their lives, thus engaging in frequent nostalgia.

Method

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

Procedure and materials. First, we assessed dispositional boredom with two items: “How often do you experience boredom” and “How prone are you to feeling bored?” (1 = very rarely, 7 = very frequently).\(^3\) Next, we assessed dispositional search for meaning in life with the 5-item search for meaning in life scale (Steger, Frazier, Oishi, & Kaler, 2006). Sample items are: “I am looking for something that makes my life feel meaningful” and “I am seeking a purpose or mission for my life” (1 = completely disagree, 7 = completely agree). Finally, we assessed dispositional nostalgia with the 5-item Southampton Nostalgia Scale (Routledge et al., 2008). Sample items are: “How often do you experience nostalgia?” (1 = very rarely, 7 = very frequently) and “How important is it for you to bring to mind nostalgic experiences?” (1 = not at all, 7 = very much).

Results

We averaged the boredom items (\(r = .77, p = .001\)), the search for meaning in life items (\(\alpha = .75\)), and the nostalgia items (\(\alpha = .91\)) to form corresponding composites.
Boredom was correlated with search for meaning in life, \( r = .27, p = .01 \) and with nostalgia \( r = .27, p = .01 \). In addition, search for meaning in life was correlated with nostalgia \( r = .27, p = .01 \).

We proceeded to test whether search for meaning in life mediated the relation between boredom and nostalgia (Preacher & Hayes, 2008; Figure 4). Boredom was linked to nostalgia: the more frequent participants experienced bored, the more nostalgic they felt, \( B = 0.22, S_e = 0.10, t(87) = 2.24, p = .03 \). Furthermore, boredom was linked to search for meaning in life: the more frequent participants experienced bored, the more likely they were to search for meaning in life, \( B = 0.24, S_e = 0.09, t(87) = 2.68, p = .01 \). Moreover, participants’ search for meaning in life significantly predicted how often they felt nostalgic, \( B = 0.24, S_e = 0.11, t(87) = 2.10, p = .04 \). Importantly, search for meaning mediated the effect of boredom on nostalgia: the original significant association between boredom and nostalgia dropped to non-significance after entering search for meaning in life in the model, \( B = 0.16, S_e = 0.10, t(87) = 1.62, p = .11 \). In addition, an accelerated bias-corrected bootstrap method with 5,000 bootstraps (Hayes, 2009) confirmed that the 95-percent confidence interval of the indirect (i.e. mediated) effect was positive, \( 0.01 < B_{95} < .14, S_e = 0.03, \) total \( R^2 = 0.10 \), asserting that the association between boredom and nostalgia was significantly mediated by search for meaning.

**Discussion**

We were concerned in the current study with the relations between boredom, search for meaning in life, and nostalgia at the dispositional level of analysis. As hypothesized, boredom was associated with greater search for meaning in life, which in turn predicted more frequent nostalgic engagement. Thus, after identifying the causal order of the meaning-regulation process in Studies 4-8, Study 9 began to reveal its mediational path. Boredom entails nostalgia en route to search for meaning.
Study 10: Boredom Re-establishes Meaningfulness through Nostalgia

Study 10 aimed to provide a decisive test of the meaning-regulation process (Mediation; Figure 1). Following the findings—obtained in separate “causal chain” studies—that boredom triggers nostalgia and that nostalgia contributes to a sense of meaningfulness, we hypothesized and tested in a single study that individuals who feel highly (vs. little) bored would become more nostalgic, and, in turn, would experience increased sense of meaningfulness. Past research has shown that a momentary sense of meaningfulness contributes to more general perceptions of presence of meaning in one’s life (Heine et al., 2006; Van Tilburg & Igou, 2011c). For that reason, we also tested whether the sense of meaningfulness imbued by nostalgia would subsequently foster greater presence of meaning in life as a whole. Finally, we examined the uniqueness of the proposed meaning-regulation process. Is this process evident even after controlling for positive and negative affect? We deemed this test helpful given data that nostalgia involves (Bartlett et al., 2010) or intensifies (Wildschut et al., 2006) positive affect and despite data (from current Studies 2-3) that the effect of boredom on nostalgia is unlikely to involve sad-mood regulation.

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

Procedure and materials. We manipulated boredom with the reference copying task Van Tilburg and Igou (in press-a), as in Studies 1 and 4. We followed this manipulation with the task boredom manipulation check (“To what extent was the task you just completed boring?”; $1 = \text{not at all}, 7 = \text{very much}$). The measures followed (in the stated order).

First, as in the unspecified memory condition of Studies 1-3, participants recalled a past event, listed four keywords relevant to it, described it in writing, and
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stated the extent to which their memory was nostalgic (“This memory is nostalgic;” 1 = strongly disagree, 6 = strongly agree). In addition, participants indicated their felt nostalgia (“Right now, I am feeling quite nostalgic,” “Right now, I’m having nostalgic feelings”; 1 = strongly disagree, 6 = strongly agree). Next, participants rated the extent to which the memory provided them with a sense of meaningfulness on the following five items (Van Tilburg & Igou, 2011a): “This memory gives me … (a) a sense of meaning, (b) a sense of purpose, (c) the impression that things make sense, (d) a sense of value, (3) a sense of significance” (1 = strongly disagree, 6 = strongly agree).

Afterwards, participants also indicated whether they momentarily felt positive (“Right now, I feel positive”) and negative (“Right now, I feel negative”) (1 = strongly disagree, 6 = strongly agree). Finally, participants completed the presence of meaning in life questionnaire (Steger et al., 2006; 1= strongly disagree, 7 = strongly agree), which comprises four non-reversed items (“I understand my life’s meaning,” “My life has a clear sense of purpose,” “I have a good sense of what makes my life meaningful,” “I have discovered a satisfying life purpose”) and one reversed item (“My life has no clear purpose”).

Results

Task boredom manipulation check. We entered the task boredom item into an ANOVA. Participants in the high boredom condition (M = 5.79, SD = 1.62) considered the task more boring than participants in the low boredom condition (M = 4.93, SD = 1.44), F(1, 80) = 9.33, p = .01, η² = .10. The manipulation was effective.

Nostalgia. Rating of memory as nostalgic and the felt nostalgia composite (see below) were correlated (r = .82, p = .001).

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

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

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

**Main SEM.** As portrayed in Figure 5a, the main model specified the boredom induction \((0 = \text{low boredom}; 1 = \text{high boredom})\) as predictor of a latent factor labeled nostalgia; this latent factor represented the two nostalgia indicators (i.e., nostalgic memory, felt nostalgia). Also, the model treated nostalgia as predictor of sense of meaningfulness \((\alpha = .91 \text{ for the relevant composite})\), and treated sense of meaningfulness as predictor of presence of meaning in life averages \((\alpha = .87 \text{ for the relevant composite after coding the reversed item}; \text{the two indices were correlated, } r = .38, p < .001)\). The error variance of nostalgia was set to 1 for model identification purposes (Kline, 2005).

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

Given the excellent model fit, we proceeded with the estimation of the direct effects using the bias-corrected bootstrapping method (Efron, 1987) and employing 5,000 bootstraps (Hayes, 2009). As portrayed in Figure 5a, all proposed direct effects were significant. To begin with, boredom induction predicted nostalgia, as participants who were highly bored scored higher on nostalgia, $B = 0.56$, $p = .01$ ($0.11 < B_{95} < 0.98$). Both the nostalgic memory indicator and the felt nostalgia indicator loaded significantly on nostalgia, $B = 1.45$, $p = .001$ ($1.17 < B_{95} < 1.72$), $B = 1.31$, $p = .001$ ($1.03 < B_{95} < 1.56$), respectively. Nostalgia subsequently predicted greater sense of meaningfulness, $B = 0.76$, $p = .001$ ($0.51 < B_{95} < 1.01$), which in turn contributed positively to presence of meaning in life, $B = 0.30$, $p = .001$ ($0.15 < B_{95} < 0.47$).

Next, we turned to the analysis of the indirect (i.e. mediated) effects, again employing 5,000 bias-corrected bootstraps. The indirect effects of boredom on nostalgia was significant, $0.16 < B_{95} < 1.45$, and $0.15 < B_{95} < 1.34$, respectively. Moreover, boredom predicted an increase in sense of meaningfulness through nostalgia, $0.09 < B_{95} < 0.82$, and nostalgia predicted an increase in presence of meaning in life, $0.13 < B_{95} < 0.36$. Importantly, the two-step indirect effect of boredom on presence of meaning in life through nostalgia and sense of meaningfulness was also significant, $0.03 < B_{95} < 0.28$. In sum, the results show that boredom heightens the presence of meaning in life through nostalgia, and hence provide strong support for the notion that nostalgia is implicated as process for regulating the meaninglessness involved in boredom.

Subsidiary SEM. As portrayed in Figure 5b, the subsidiary model was identical to the main one, with the inclusion of positive and negative affect. These affect indicators were allowed to correlate (as marked by the double arrow between their error
terms), and each was added as predictor of sense of meaningfulness and presence of meaning in life. Our goal was to test whether the associations of nostalgia with sense of meaningfulness and subsequent presence of meaning in life remained significant after partialling out the two affect indicators. Consequently, we partialled positive and negative affect out of the specific indirect effect of boredom on (a) sense of meaningfulness through nostalgia, and (b) presence of meaning in life through nostalgia and sense of meaningfulness.

The specified structural equation model again captured the observed covariance matrix excellently, $\chi^2(9) = 4.97, p = .84$, and this was additionally confirmed by the fit indices, $RMEA = .00$, $TLI = 1.04$, $CFI = 1.00$. Moreover, all direct effects that were also specified in the main model were still significant (all $ps < .03$; estimated with 5,000 bias-corrected bootstraps). Additional significant associations between nostalgia with positive and negative affect were obtained, $B = 0.42, p = .01$ ($0.15 < B_{95} < 0.69$), $B = -0.30, p = .05$ ($-0.62 < B_{95} < -0.01$), respectively. Also, positive affect accounted for some of the variance in sense of meaningfulness, $B = 0.39, p = .02$ ($0.07 < B_{95} < 0.65$).

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

Discussion

In Study 10, we portrayed the full meaning-regulation process. We included a meaning threat (boredom), observed attempts at meaning-reestabishment (i.e., through nostalgia), and then witnessed increases in sense of meaningfulness and presence of meaning in life. Not only did we obtain support for the proposed meaning-regulation process, but we also established its uniqueness: The process held up even when controlling for negative and positive affect.

General Discussion

We offered a theoretical model according to which boredom—an aversive experience accompanied by the perception that one’s behavior, situation, or life lacks meaning—fosters nostalgia in an attempt to re-establish meaningfulness. Across 10 studies, we systematically examined the steps of the proposed meaning-regulation (Figure 1). The three steps reflected distinct, yet interrelated, research traditions. First, we tested the effect of boredom on nostalgia (Studies 1-3, Effect; Wilson et al., 2010). Second, we tested each of the causal steps of the meaning-regulation process (Studies 4-8, Process Causality; Spencer et al., 2005). Finally, we estimated mediation models based on the previously verified causal order (Studies 9-10, Mediation; MacKinnon et al., 2007). Below, we summarize in more detail findings pertaining to the three steps. We proceed with a consideration of implications and future research directions.

Summary of Findings

Effect. In Study 1, we investigated whether engagement in a boring task leads to retrieval of nostalgia-imbued memories. Indeed, participants who were highly bored retrieved memories that made them feel nostalgic, regardless of explicit instructions
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specifying that the memory be nostalgic. Little bored participants only retrieved
nostalgic memories when explicitly instructed to do so. Study 2 replicated the effect of
boredom on nostalgic retrieval using a different boredom induction and ruling out sad-
mood regulation as an alternative. Finally, Study 3 demonstrated that the experience of
boredom indeed led to nostalgia. Overall, these findings constitute compelling evidence
for a causal link between boredom and nostalgia.

Process causality. We proposed that bored individuals resort to nostalgia
because it helps them regulate the meaninglessness involved in boredom. Study 4
showed that induced boredom increases meaninglessness but does not influence such
states as sad mood, loneliness, low self-esteem, anger, and frustration. Study 5 revealed
that induced boredom heightens motivation to engage in meaningful behavior. Study 6
confirmed that confrontation with direct meaning-threat increases felt nostalgia.
Importantly, Study 7 established that nostalgia boost meaningfulness by increasing
recall of meaning-related (but not neutral) words. Finally, Study 8 demonstrated that
nostalgia makes individuals feel more meaningful. In all, Studies 4-8 provided strong
support for the proposed causal links between steps of the meaning-regulation process.
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**Mediation.** Next, we proceeded to test the meaning-regulation process in its entirety rather than in piece-meal fashion. Study 9 indicated that individuals who are frequently bored are keener to engage in search for meaning in life resulting in higher levels of dispositional nostalgia. Finally, Study 10 showed that nostalgia helps bored individuals to experience a sense of meaningfulness and, more generally, the presence of meaning in their life. Specifically, boredom was linked to a greater sense of meaningfulness and heightened presence of meaning in life through nostalgia. Importantly, this link was evident even after controlling for generalized affect. The proposed meaning-regulation process is independent of positive and negative affect.

**Implications and Future Research Directions**

**Boredom.** Only recently has boredom started to receive due empirical attention. The relevant literature has been predominantly concerned with dispositional boredom, examining its correlates and associating it with intrapersonal of societal dysfunctionality (Blaszczynski et al., 1990; Gordon et al., 1997; Kass et al., 2001; Rupp & Vodanovich, 1997; Stickney & Miltenberger, 1999; Verwey & Zaidel, 2000). In this research, we were also concerned with dispositional boredom (Study 9) but focused in addition on state boredom. We considered it timely to zero in on state boredom. Van Tilburg and Igou (in press-a) identified a unique set of feelings, cognitions, and motivations that distinguish this fairly common state from other negative states such as sadness, anger, and frustration. The distinct emotional signature of state boredom may shed light to its far-reaching consequences, such as risk-taking (e.g., joy riding), physical aggression, and delinquency (Dahlen, Martin, Ragan, & Kuhlman, 2004; Kellett & Gross, 2006; Newberry & Duncan, 2001; Rupp & Vodanovich, 1997). Importantly, the current research points to one way that these consequences may be averted: through nostalgic reflection.
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An increasing amount of empirical evidence highlights the pivotal role of boredom in self-regulation. In particular, boredom is involved in the regulation of enjoyment (Smith et al., 2009), interest (Sansone, Weir, Harpster, & Morgan, 1992), challenge (Van Tilburg & Igou, in press-a), and meaning (current Studies 4-10; see also Van Tilburg & Igou, in press-a). On a more general level, it appears that boredom constitutes a source of self-regulatory “feedback,” directing individuals towards the resolution of the discrepancy between their current and desired state (cf. Carver, 2004).

Nostalgia. The emotion of nostalgia is bittersweet: it contains both positive and negative elements, with the former being more common than the latter (Hepper et al., in press; Wildschut et al., 2006). In addition, nostalgia servers several functions, most pertinent of which is its existential function (Juhl et al., 2010; Routledge et al., in press; Routledge, Sedikides, Wildschut, & Juhl, in press; Sedikides et al., 2004). The present research adds to the understanding of how and when nostalgia is used as a process to protect oneself from threats to life’s meaninglessness. By showing that the mundane experience of boredom increases the retrieval of nostalgic memories in an attempt to boost meaningfulness, we highlight nostalgia’s relevance in the management of everyday existential fears which accompany many dull but unfortunately necessary behaviors such as entering data (or doing committee work).

Alongside boredom, nostalgia also serves crucial self-regulatory functions. Nostalgia is a source of social connectedness, self-esteem, positive affect, and, importantly, meaning. Indeed, a growing amount of literature documents the status of nostalgia as a potent self-regulatory tool (Loveland et al., 2010; Vess et al., in press; Wildschut et al., 2006, 2010; Zauberman et al., 2009; Zhou et al., 2008). Moreover, nostalgia propels individuals to engage in behavior directed at attaining desired goals (i.e., approach-orientation) rather than at distancing from undesirable goals (i.e., avoidance-orientation; Stephan, Sedikides, Wildschut, & Routledge, 2011). This
intriguing property of nostalgia exemplifies its value not only for one’s present, but also for one’s future. Congruent with this assertion, nostalgia has been found to infuse individuals with inspiration (Stephan, Wildschut, Sedikides, Routledge, & Arndt, 2011).

**Relevance to mind wandering.** Recent research indicates that processing rehearsed versus novel stimuli increases the proclivity to engage in “mind wandering” (Mason et al., 2007). This proclivity is associated with increased activity of the brain’s cortical regions that remain active while individuals are at rest. The authors speculated that mind wondering “lends a sense of coherence to one’s past, present, and future experiences” (p. 395), as part of mental time travelling. Although our research focused on boredom, meaning, and nostalgia, there exist interesting parallels between this mind wandering research and current findings.

To being with, exposure to rehearsed stimuli may have induced a sense of boredom, similar to drawing spirals or copying references. Moreover, the suggested sense of coherence ostensibly stemming from mind wandering shares commonalities with felt nostalgia. In contrast to our research objectives, Mason et al. (2007) were concerned primarily with neurological patterns of activation associated with mind wandering. Nevertheless, future research will do well to test whether the subjective experiences of boredom, meaning, and nostalgia are associated with the cortical brain regions that Mason and colleagues found to be linked with mind wandering. Interestingly, our research may have delved into the affective and motivational processes that make the mind wander when processing rehearsed stimuli.

**Societal relevance.** The finding that nostalgia serves as an “antidote” to boredom has societal implications. Boredom is an experience that affects individuals of various age groups, ranging from adolescents (Caldwell, Darling, Payne, & Dowdy, 1999) to the elderly (Gana & Akremi, 1998), and being easily bored is associated with psychological dysfunctions (Vodanovich, 2003). Nostalgia, by instilling a sense of
meaningfulness, constitutes a powerful remedy for boredom. The meaning-conducive benefits of nostalgia may manifest in everyday settings such as having a conversation or listening to music (Barrett et al., 2010). Boredom, then, may be curtailed by conversing with nursing-home elderly about their past or arranging for them to listen nostalgic songs. Similar interventions may be effective among other somewhat marginalized groups such as immigrants, migrants, first-year boarding school students, and international students (Sedikides, Wildschut, Routledge, Arndt, & Zhou, 2009) or among the unemployed and the alienated (Barbalet, 1999; Fromm, 1972/2004; Sedikides, Wildschut, Gaertner, Routledge, & Arndt, 2008; Vodanovich, 2003). Essentially, nostalgia represents an effective and easily implemented strategy for combating the meaninglessness that boredom originates.

In Closing

Across 10 studies, we tested and confirmed our theoretical model, namely the meaning-regulation process: Boredom fosters nostalgia in an attempt to re-establish a sense of meaningfulness. Boredom is associated with meaninglessness and motivates meaning re-establishment. Nostalgia, in turn, furnishes a sense of meaningfulness and presence of meaning in life. Nostalgia is a cure to crippling boredom. And this assertion is a cause for celebration. All those researchers who devote hours of their precious time entering data while rapidly developing repetitive strain injury, carpal tunnel syndrome, or just an old-fashioned chronic depression, may wish to know that feeling bored in the present is compensated upon be living nostalgically in a beautiful past which makes (present and future) life worth living.
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In all studies, we provided a dictionary definition of nostalgia (“sentimental longing for the past”), a common practice in relevant research (Routledge et al., in press; Wildschut et al., 2006, 2010).

We obtained similar results using the non-standardized scores. Moreover, a multilevel model with word-type, the memory condition, and their interaction as fixed-effect predictors of recalled words yielded similar results.

We refrained from using the boredom proneness scale (Farmer & Sundberg, 1986), because it includes an item that assesses meaning (i.e., “I am often trapped in situations in which I have to do meaningless things”).
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Figure 1: *Overview of Studies*

**Effect**

- Boredom → Nostalgia

**Studies 4-5**

- Boredom → Meaninglessness

**Study 6**

- Meaninglessness → Nostalgia

**Studies 7-8**

- Nostalgia → Meaningfulness

**Study 9**

- Boredom → Search for Meaning → Nostalgia

**Study 10**

- Boredom → Nostalgia → Meaningfulness
Figure 2: Meaninglessness, Sadness, Loneliness, Low Self-Esteem, Anger, and Frustration as a Function of Boredom in Study 4

Note: * p = .05; ns p > .30.
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Figure 3: Recall of Meaning-Related and Neutral Words as a Function of Nostalgia in Study 7

![Diagram showing recall frequency of meaning-related and neutral words as a function of nostalgia in Study 7. The x-axis represents word type (meaning-related and neutral) and the y-axis represents standardized recall frequency. The diagram compares recall frequency between a nostalgic event and an ordinary autobiographical event.]
Figure 4: Search for Meaning in Life Mediates the Boredom-Nostalgia Link in Study 9

Note: * $p = .05$; ** $p = .01$. 
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Figure 5a: Main SEM in Study 10

Note. * p = .05; *** p = .001.
Figure 5b: *Subsidiary SEM in Study 10*

### Note

* $p = .05$; ** $p = .01$; *** $p = .001$. 

### Diagram

- **Boredom**
  - $B = 0.56^*$

- **Nostalgia**
  - $B = 1.31^{***}$
  - $(\sigma^2 = 1)$
  - $B = 1.46^{***}$

- **Nostalgic Memory**
- **Felt Nostalgia**

- **Positive Affect**
  - $B = 0.42^{**}$

- **Negative Affect**
  - $B = -0.30^*$

- **Sense of Meaningfulness**
  - $B = 0.60^{***}$

- **Presence of Meaning in Life**
  - $B = 0.04$
  - $B = 0.21^*$
  - $B = -0.19$

- **Boredom**
  - $B = 1.31^{***}$

- **Nostalgia**
  - $B = 0.42^{**}$

- **Nostalgic Memory**
  - $B = 1.46^{***}$

- **Felt Nostalgia**
  - $B = 0.21^*$

- **Sense of Meaningfulness**
  - $B = 0.60^{***}$

- **Presence of Meaning in Life**
  - $B = 0.04$
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Overview of Main Findings

Only a handful of studies in past research have examined the effects of state boredom on cognition, motivation, and behavior. The research presented in the current thesis sought to fill this void by systematically examining one particularly interesting facet of boredom: meaning-regulation. It was first investigated whether boredom triggers a meaning-regulation process (Chapter 2), and what people typically consider meaningful behavior to be (Chapter 3). After establishing that boredom involves meaning-regulation motivations and identifying core features of meaningful behavior, it was subsequently tested whether boredom affected people’s social identities (Chapter 4), prosocial behavior (Chapter 5), and nostalgic memories (Chapter 6). Below, the main results from the empirical chapters will be briefly reviewed. Moreover, Tables 1-5 report the most important effect sizes of each from each conducted study.

Chapter 2: Boredom and Meaning (Van Tilburg & Igou, in press b)

What do bored people feel, think, want, and do? Does boredom indeed involve a meaning-regulation motivation? Based on past research (e.g., Barbalet, 1999; Csikszentmihalyi, 1990; 2000), the current investigation of boredom started by examining whether meaning and challenge are part of the affective, cognitive, motivational, and behavioral signature of boredom. Experiences that evoke boredom may sometimes also trigger other negative affective experiences, such as sadness, anger, or frustration. It was therefore important to compare the proposed content of boredom against these three other affective state in order to identify a distinctive experiential content of boredom (see also Roseman, Wiest, & Swartz 1994). Indeed, Study 1 revealed that experiences of boredom can be effectively distinguished from sadness, anger, and frustration as “boredom involves feeling restless and unchallenged at the same time while thinking that the situation serves no purpose. One wants to engage in
behavior that is different and purposeful, and this is accompanied by turning to activities that are considered to be more meaningful” (Chapter 2, p. 54).

The validity of the distinctive experiential configuration identified in Study 1 was subsequently confirmed in Study 2 and 3. These studies revealed reliable positive associations with the established boredom proneness scale and a state boredom measure, respectively. Finally, Study 4 indicated that the distinctive experiential content of boredom is indeed more pronounced after people engage in a highly boring activity, irrespective of sadness, frustration, or anger. In essence, these findings show that boredom in particular involves processes aimed at regulating levels of challenge and meaningfulness.

Chapter 3: The Meaningfulness of Behavior (Van Tilburg & Igou, 2011b)

The research of Chapter 2 indicates that boredom triggers meaning-regulation attempts. What are defining characteristics of such actions that people deem meaningful? This question was examined in a series of five studies reported in Chapter 3. Based on an expectancy-value approach, it was hypothesized that behaviors are especially considered to be meaningful when they are associated with a highly valued goal and when they are also perceived to be instrumental in the pursuit of this valued goal.

Consistent with the hypothesis, Study 1, 2a and 2b confirmed that behaviors which serve highly valuable goals are considered to be more meaningful compared to behaviors that either do not serve a valuable goal or behaviors that are not instrumental in the pursuit of a goal. Moreover, the results of Study 3 further indicated that the appraised meaningfulness of behavior is strongly associated with the extent to which it is instrumental in the pursuit of a valued goal regardless of whether or not it was also fun to perform, and the results of Study 4 replicated previous findings by showing that the associated goal value and instrumentality are also key features of meaningful
behavior in the context of very common everyday life activities. In sum, the results of these studies provide consistent evidence that the appraised meaningfulness of behavior is embedded in its self-regulatory elements. That is, following an expectancy-value approach it was found that behaviors viewed as helpful in the pursuit of valuable goals were considered to be meaningful. Importantly, rather than imposing an external definition of meaningful behavior, the research of Chapter 3 provided evidence for a conceptualization of this concept based on people’s perspectives of meaningfulness as a distinct subjective entity.

The studies in Chapter 3 greatly contribute to the understanding of the meaning-regulation process that boredom triggers by identifying two characteristics of meaningful behavior in detail. Specifically, the observation that goal value and instrumentality affect the appraised meaningfulness of behavior served as the basis for developing many of the procedures adopted in Chapters 4, 5, and 6. For example, the extent to which ingroups evaluations were affected by boredom essentially depended on how instrumental ingroups were in Study 4 of Chapter 4. Similarly, the instrumentality of donating to charity was varied in Study 6 of Chapter 5, which subsequently interacted with bored people’s willingness to contribute. Moreover, in Study 5 of Chapter 5, two behaviors were contrasted to each other (helping vs. snacking) that can be considered to differ on associated goal value, with helping being associated with a presumably more valued goal than snacking. In sum, Chapter 3 provided the basis for manipulations of the meaningfulness of behavior in the subsequent chapters that focused on boredom.

Chapter 4: Boredom and Social Identity (Van Tilburg & Igou, in press a)

Given that boredom triggers meaning-regulation attempts, what consequences could this have? The research reported in Chapter 4 focused on social identity as one potential vehicle for meaning-regulation. Based on earlier research on existential threats and social identity (Castano, Yzerbyt, & PaSamino, 2004; Greenberg, Pyszczynski, &
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Solomon, 1997; Harmon-Jones, Greenberg, Solomon, & Simon, 1996), it was hypothesized that boredom would increase positive evaluations towards ingroups and less positive evaluations of outgroups. A series of five studies supported this hypothesis and revealed that bored people’s motivation to re-establish a sense of meaning indeed explains why boredom affects people’s social identities.

The results of Study 1 indicated that boredom leads to ingroup name preferences. In addition, the results of Study 2 revealed that boredom makes people harsher in their punishments of outgroup members, and Study 3 revealed an opposite pattern for the punishment of ingroup members. After these first indications of a link between boredom and social identity, two additional studies examined the underlying process of the boredom-social identity link. The results of Study 4 indicated that boredom makes people more inclusive regarding their ingroups. This finding is particularly interesting because it illuminates the pragmatic use of the adherence to instrumental social identities as a potential meaning-regulation strategy. Finally, the results of Study 5 demonstrated that boredom increases people’s evaluations of an ingroup symbol. Importantly, this effect was indeed fully mediated by participants’ motivation to engage in meaningful behavior, which confirms that the use of social identity reflects a meaning-regulation attempt under boredom. Throughout these studies, several boredom manipulation techniques were employed and various alternative factors were ruled out, including negative affect, positive affect, frustration, anger, and sadness. Overall, these five studies confirm that boredom can increase evaluations of ingroup representations and can decrease evaluations of outgroup representations as a result of a meaning-regulation attempt.

Chapter 5: Boredom and Prosocial Behavior (Van Tilburg & Igou, 2011e)

After focusing on social identity and boredom, the research presented in Chapter 5 took a bold step towards another consequence of boredom: prosocial behavior. Based
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on past research that indicates the meaning-regulation value that prosocial behavior can serve (e.g., Caprara & Steca, 2005; Furrow, King, & White, 2004; Jonas, Schimel, Greenberg, & Pyszczynski, 2002; Shek, Ma, & Cheung, 1994; see also Joireman & Duell, 2005; 2007), it was hypothesized that boredom would increase prosocial behavior. Research on boredom proneness identified an array of aversive consequences of boredom, including aggression, violence, and hostility (e.g., Dahlen, Martin, Ragan, & Kuhlmann, 2004; Rupp & Vodanovich, 1997) and suggesting that boredom can increase prosocial behavior may therefore seem counter-intuitive at first. However, a series of six studies confirmed this seemingly paradoxical expectation and illustrated the important role that meaning-regulation plays within the boredom-prosocial behavior link.

The results of Study 1a and 1b confirmed that past boredom experiences and manipulated state boredom involve a sense of meaninglessness. Similarly, Study 2 revealed that boredom proneness is negatively associated with participants’ sense of meaning in life and is positively associated with people’s search for meaning in life, again indicating that boredom is closely associated with the motivation to seek for meaning. Next, it was tested whether boredom increases prosocial behavior. The results of Study 3 confirmed that highly bored versus little bored people are more willing to make donations to a charity cause. On the behavioral level, Study 4 indicated that boredom increases the likelihood that people subsequently sign up to donate blood. The following two studies examined the meaning-regulation process hypothesized to underlie the boredom-prosocial behavior link in more detail. The results of Study 5 showed that boredom increases people’s willingness to engage in highly unpleasant but meaningful helping, but boredom does not increase participants’ willingness to engage in pleasant but meaningless snacking behavior. Importantly, this particular study suggests that boredom promotes behavior because it is meaningful, not just behavior it
is pleasant. The extent to which charity support was an instrumental means for doing something meaningful was again, but more directly, manipulated in Study 6. The results from this study indicated that boredom increases people’s willingness to donate to charity, but only if the donations are an effective strategy for doing something meaningful, illustrating the pragmatic use of prosocial behavior as a potential meaning-regulation tool.

Chapter 6: Boredom and Nostalgia (Van Tilburg, Igou, & Sedikides, 2011)

After establishing a relation between boredom, social identity, and prosocial behavior, the research reported in Chapter 6 examined if boredom motivates meaning-regulation based on a particular kind of recalled experiences: nostalgic memories. Nostalgic memories have been noted for their capacity to imbue life with meaning (e.g., Routledge, Arndt, Sedikides, & Wildschut, 2006; Routledge et al., 2010; Sedikides, Wildschut, & Baden, 2004). Consequently, it was hypothesized that boredom makes people retrieve nostalgic memories in their attempt to re-establish a sense of meaningfulness, which was confirmed across a series of ten studies.

Study 1, 2, and 3 indicate that boredom increases the likelihood that people recall nostalgic memories, and this effect can be attributed to boredom in specific rather than a more general sad mood. Next, the presumed underlying role of meaning-regulation in the boredom-nostalgia link was examined using a stepwise approach. The results of Study 4 and 5 demonstrated that, indeed, boredom heightens people’s motivation to engage in meaningful behavior in particular. Moreover, Study 6 indicated that a direct meaning-threat indeed increases nostalgia, replicating earlier research by Routledge and colleagues (2010). As predicted, nostalgia increases the cognitive activation of meaning related words, but not neutral words, as indicated by Study 7, and also heightens subjective levels of meaningfulness as observed in Study 8.
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Finally, Study 9 confirmed that the search for meaning in life indeed mediates the link between how frequently people are bored and how often they feel nostalgic, and Study 10 revealed that the retrieval of nostalgic memories resulting from boredom subsequently promote a sense of meaningfulness and meaning in life. Moreover, this full self-regulatory cycle is at least partially independent of the positive affect and reduced negative affect associated with nostalgia. Taken together, the results of these ten studies show that the retrieval of nostalgic memories indeed follows as a meaning-regulation attempt triggered by boredom, and ultimately helps those who are bored to re-establish a sense of meaningfulness.

Meaning-Regulation …or Something Else?

Besides being profoundly boring, could the prolonged engagement in repetitive activities also demand considerable effort from people, drain levels of attention, or motivate people to optimize arousal levels or challenge? Consequently, could it be that the effects of boredom therefore stem from ego-depletion, a lack of attention and effort, or the motivation to increase arousal and challenge, rather than meaning-regulation? Clearly, the experience of boredom may also promote responses besides those that can be attributed to meaning-regulation. Importantly, however, the effects of boredom on social identity, prosocial behavior, and nostalgia, can indeed be explained according to a meaning-regulation process: Meaning-regulation motives were found to statistically mediate the effect of boredom on social identity (Chapter 4, Study 5) and nostalgia (Chapter 6, Study 9). Moreover, the link between boredom and prosocial behavior was qualified by the extent to which the prosocial behavior served as an instrumental means for doing something meaningful (Chapter 5, Study 5 & 6). These findings are important as they directly point to the critical role that meaning-regulation plays in the effect of boredom on social identity, prosocial behavior, and nostalgia.
Besides confirmatory evidence for meaning-regulation as the essential underlying process in explaining why boredom affects social identity, prosocial behavior, and nostalgia, there were two particularly important alternative self-regulation processes being ruled out throughout Chapter 4, 5, and 6: negative state relief and mood-regulation (Cialdini, Darby, & Vincent, 1973; Handley & Lassiter, 2002; Isen, Shaller, Clark, & Karp, 1978; see also: Cialdini, Schaller, Houlihan, Arps, Fultz, & Beaman, 1987). According to these accounts, people who experience a negative mood are inclined to engage in responses that may facilitate a less negative or more positive mood. Boredom is an unpleasant experience (although perhaps not necessarily a mood) and one might therefore expect bored people to seek out positivity or avoid negativity. Importantly, however, several of the findings suggest that negative state relief and mood-enhancement offer implausible alternative interpretations for the observed effects of boredom on social identity, prosocial behavior, and nostalgia. First of all, several (pilot) studies indicated that the employed boredom manipulations did not simply induce a general sad mood (e.g., Chapter 2, Pilot Study of Study 4). In addition, the results of Study 5 of Chapter 5 indicate that boredom increases people’s willingness to engage in meaningful helping behavior even when this behavior is considered to be highly unpleasant. Moreover, although nostalgic memories were found to hold the capacity to make people feel less negative and more positive, the meaning re-establishment that nostalgia facilitated for those who were bored could not be explained as an indirect effect of these affective benefits (Chapter 6, Study 10). In sum, there is both support for meaning-regulation as underlying process as well as evidence that rules out negative state relief and mood-enhancement as likely alternative interpretations of boredom’s effects on social identity, prosocial behavior, and nostalgia.
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Implications, Limitations, and Future Directions

Research on boredom has been scarce, especially regarding its state experience. Rather, research on boredom has been almost exclusively conducted in relation to boredom proneness, which reflects people’s tendency to experience boredom. The vast majority of correlates of boredom proneness is aversive, be it on the psychological level or the societal level. For example, boredom prone people are more likely to be aggressive, anxious, or addicted to gambling, just to name a few (e.g., Blaszczynski, McConaghy, & Frankova, 1990; Dahlen et. al, 2004; Gordon, Wilkinson, McGrown, & Jovanoska, 1997; Rupp & Vodanovich, 1997). The research presented in the current thesis suggests that the common view of boredom as mainly a source of many horrid phenomena needs to be heavily revised: Although the experience of boredom in itself may be unpleasant, its motivated consequences are far from solely negative. Instead, boredom can lead to a rich spectrum of responses that serve the important goal of re-attaining a sense of meaningfulness. Essentially, the research presented in this thesis indicates that boredom fulfills an important role in motivating several important everyday life cognitions and behaviors, including social identification, prosocial behavior, and nostalgia. As a result, boredom may indirectly contribute to a sense of meaningfulness and the perceived meaning in life.

The finding that boredom triggers meaning-regulation implications has a wide range of implications – both on the theoretical and practical level. In what follows, several relevant implications, limitations, and future directions will be discussed in relation to existential psychology, self-esteem, regulatory focus, the need for challenge, boredom and aggression, a functionalist perspective on boredom, emotions research, and the role of boredom and meaning-regulation in society.
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Boredom as Common Existential Threat

A great increase in empirical research in the domain of existential psychological has been witnessed in the last decades, especially in relation to research on mortality salience. As a result of this research, several existential threats have been identified including the aforementioned mortality salience, but also loneliness (Van Tilburg & Igou, 2011c), uncertainty (Van den Bos, 2001), or ostracism (Case & Williams, 2004). The research presented in the current thesis confirms that also boredom poses an existential threat that triggers meaning-regulation attempts.

Intriguingly, although elaborate thoughts about death, experiences of ostracism, and being lonely may happen relatively infrequently, the experience of boredom (and possibly also uncertainty) is perhaps more common in life. The fact that boredom is so common and that it has such wide meaning-regulation consequences illuminates the importance of existential psychological processes in everyday life. Moreover, social identity, prosocial behavior, and nostalgia are phenomena that are quite frequently expressed. Overall, the research on boredom and meaning-regulation thus indicates that meaning-regulation is a process that can be involved in many everyday life experiences. Ironically, even though the experience of boredom has almost been ignored in past social psychology research, its implications seem related to nothing less than people’s pursuit of meaning in life.

Additional Factors on Interest

The present investigation of boredom focused on its meaning-regulation component in particular. Throughout this research, different consequences were considered, meditation processes were examined, and some boundary conditions were tested. Besides the factors that were included in the present thesis, what variables might additionally play important roles in boredom’s meaning-regulation consequences? And what predictions might future research examine? Below, the potential roles of three
such interesting additional variables are briefly considered in relation to boredom and meaning-regulation: self-esteem, regulatory focus, and the need for challenge.

**Self-esteem.** A key variable in much past existential psychology research – especially in the domain of terror management theory – is self-esteem. In light of this theory, self-esteem involves the evaluation of oneself as being “a person of value in a world of meaning” (Solomon, Greenberg, & Pyszczynski, 2004, p. 17; see also Greenberg, Koole, & Pyszczynski, 2004). Interestingly, people who hold high self-esteem are typically less affected by existential threats such as mortality salience (e.g., Arndt & Greenberg, 1999; Harmon-Jones et al., 1997). According to Pyszczynski, Greenberg, and Solomon (1997), high self-esteem buffers against existential threats because it involves the belief that one is appropriately living up to the worldviews that are part of one’s culture, which subsequently reduces the potential for anxiety caused by mortality salience. Essentially, existential threats are less problematic for those who are high in self-esteem.

Given that boredom functions as existential threat that triggers meaning-regulation attempts, one possibility is that the effect of boredom on meaning re-establishment responses such as social identity, prosocial behavior, and nostalgia is especially pronounced for those who lack self-esteem, similar to what has been observed for mortality salience effects on worldview defense. Moreover, those chronically low in self-esteem have been found to score higher on the tendency to experience boredom during leisure activities (Iso-Ahola & Weissinger, 1990). One possible explanation for this finding is that those lacking self-esteem fail to recognize the meaningfulness in life or their activities, subsequently increasing the susceptibility to boredom (see also Fahlman et al., 2009). Future research may thus focus on the role of self-esteem in the likelihood to feel bored as a result of a lack of perceived meaning,
and may investigate whether high self-esteem can serve as a buffer against the meaning-threat that boredom poses.

**Regulatory focus.** People differ in the way they engage in self-regulation. According to regulatory focus theory (Higgins, 1989; Higgins, 2002; Higgins & Silberman, 1998) two typical orientations in self-regulation are commonly adopted: a promotion focus and a prevention focus. Briefly stated, a promotion focus involves an ‘eager’ strategy in which positive outcomes are pursuit, whereas a prevention focus involves the ‘vigilant’ avoidance of negative outcomes. Although behavioral consequences of these two regulatory orientations may sometimes be the same, the process through which goals are accomplished may differ. For example, a student who adopts a promotion focus may try to achieve a high grade as an accomplishment, whereas a student with a prevention focus may feel that a high grade is a responsibility. Moreover, regulatory focus can also affect some preferences and behavior choices differently, for example in relation to courses of action that imply change (Liberman, Idson, Camacho, & Higgens, 1999; see also Igou, Van Dongen, & Van Tilburg, in press). Although regulatory focus can be treated on the level of individual differences, it can also vary contextually, for example as a result of priming (e.g., Shah & Higgins, 2001).

Regulatory focus has proven to be an important factor in many attitudes and behaviors (e.g., car preferences; Safer, 1998, cited in Higgins, 2002). How may regulatory focus impact on boredom and in particular the subsequent meaning-regulation process? Interestingly, there is already some research on regulatory focus and boredom by Smith, Wagaman, and Handley (2009) who conducted a series of studies in which participants were asked to engage in a boring task (copying letters). These researchers observed that those participants who had a promotion focus were more likely to implement variations such as alternating the use of capitalized and non-
capitalized letters relative to those who had a prevention focus, presumably in the attempt to make the task more interesting and pleasant. Although their research did not involve a variation of the level of boredom that was involved in the task but rather compared the results to an interesting task, these results nevertheless suggest that regulatory style can affect behaviors that are exhibited during some boring activities.

Given that a promotion focus motivates behaviors aimed at attaining positive outcomes, one possibility is that boredom especially motivates the engagement in meaningful behavior among those who adopt a promotion focus. Another interesting possibility is that those who adopt a prevention focus are more likely to opt out of repetitive tasks – if possible – in order to completely avoid the aversive experience of boredom. A third possibility is that people with a promotion focus are more inclined to engage in meaning-regulation attempts that involve eagerly seeking out behavioral means for meaning-regulation (e.g., donating blood) whereas those in a prevention focus may try to re-establish a sense of meaningfulness by relying on means that require less active behavioral involvement (e.g., retrieving nostalgic memories). An interesting direction of future research therefore involves the investigation of how such orientations in the self-regulation process affect the links observed between boredom with meaning-regulation motives, social identity, prosocial behavior, and nostalgia.

The need for challenge. Although the main focus of the current research was on boredom and meaning-regulation, the results reported in Chapter 2 indicate that boredom also involves the motivation to increase challenge. A relatively large proportion of past research has been conducted on boredom and challenge (e.g., Csikszentmihalyi, 1990; 2000) or related factors such as the need for stimulation, attainment of optimal levels of arousal, and sensation seeking (e.g., Gordon et al., 1997; Vodanovich, 2003). In fact, aggression and violence – two notable correlates of
boredom proneness – have been partially explained according to sensation seeking motives (Dahlen et al., 2004).

Apparently, boredom involves multiple motivational processes (i.e. regulating challenge and meaning) and the effects of these motivations may to some extent be independent of each other. A very interesting possibility that was not examined in the current research is when and how these two motivational processes may occasionally interact with each other. That is, boredom may especially promote the engagement in challenging behavior if it at the same time involves a considerable source of meaningfulness (e.g., competing in the prestigious but challenging New York City marathon as a symbolic victory over cancer). The investigation of how a need for challenge and meaning interact with each other could provide key insights into why and when boredom sometimes promotes rather effortful behaviors such as donating blood as an alternative to simply engaging in any immediately available course of action that is challenging but rather meaningless (e.g., standing on one leg for an hour).

**Boredom, Meaning, and Aggression**

One of the key observations from past boredom proneness research is that people who are easily bored hold greater aggressive tendencies, and score higher on measures of hostility and violence (e.g., Dahlen et al., 2004; Rupp & Vodanovich, 1997). How can these findings be integrated with the results reported in the current thesis, particularly in light of the observed link between boredom and prosocial behavior? Although the boredom-prosocial behavior link may at first sight seem at odds with the boredom-aggression link, a meaning-regulation approach may partially resolve this apparent paradox. Research on the existential threat posed by ostracism (Warburton, Williams, & Cairns, 2006; see also Stillman, Baumeister, Lambert, & Crescioni, 2009) indicates that subsequent aggressively acts towards others can serve as a means for gaining a sense of control, which is an important factor contributing to
meaningfulness (e.g., Heine, Proulx, & Vohs, 2006). Moreover, behaviors such as racism, discrimination, and outgroup derogation may lead to some level of hostility, aggression, or violence, but they can also serve as attempt aimed at attaining a sense of meaningfulness through social identification (e.g., Castano et al., 2004; Greenberg et al., 1997; Harmon-Jones et al., 1996). Indeed, the findings reported in Chapter 4 indicate that also boredom can foster negative outgroup judgments and this seems to follow from a meaning-regulation process. Thus, although prosocial behavior and aggression stemming from boredom can seem contradictory responses, they could nevertheless partially originate as a result of meaning-regulation. Although a full consideration of the relations between boredom, meaning, and aggression goes beyond the scope of the current thesis, it is worthwhile to briefly highlight some interesting first findings in which this proposed meaning-regulation process was examined.

Recent findings on boredom, meaning, and aggression. As part of a large correlational study (Van Tilburg & Igou, 2011a), two-hundred-sixty-one students from the University of Limerick (84 men, 173 women, 4 undisclosed; $M_{\text{age}} = 23.26$, $SD = 8.93$) completed the boredom proneness scale (Farmer & Sundberg, 1986; Vodonaovich & Kass, 1990), the search for meaning in life scale (Steger, Frazier, Oishi, & Kaler, 2006), and the aggression questionnaire (Buss & Petty, 1992). Based on the above stated hypothesis that meaning-regulation may explain part of the boredom-aggression link, a mediation model (Preacher & Hayes, 2008) was estimated in which boredom proneness was treated as independent variable, the aggression scores were treated as dependent variable, and the search for meaning in life was included as mediator. This analysis confirmed that the search for meaning in life indeed partially mediates the link between boredom and aggression.\(^1\)

Although the abovementioned preliminary findings do not yet yield a full picture of the meaning-regulation processes that may be involved in aggression due to
boredom, they nevertheless provide a promising direction. It should be noted, however, that future research may include other variables besides meaning-regulation as the association between boredom and aggression may be partially explained by others factors, such as sensation seeking (Dahlen et al., 2004). Overall, research on boredom and aggression offers an exiting course of research in which several motivational consequences of boredom may play a role, including meaning-regulation.

Potential Adaptive Functions of the Boredom-Meaning Link

Why is there a human capacity for experiencing boredom? What functional role might boredom play in society? Clearly, the findings reported in the current thesis indicate that boredom is not merely a source or correlate of aversive tendencies (see Vodanovich, 2003). Rather, boredom can promote a variety of responses, some of which hold quite beneficial consequences for the self or society. Furthermore, these responses to boredom are explained according to a meaning-regulation process: boredom promotes the engagement in meaningful behavior. By examining what is common across many effects of boredom, for example those on social identity, prosocial behavior, and nostalgia, it may be possible to carefully formulate a potential function that boredom may serve in general. Boredom involves a strong affective signal that makes people contemplate alternative and more meaningful courses of action. Speculatively, this subsequently readies them to detect those behaviors that are high in instrumentality in the pursuit of highly valued goals; it essentially attunes people to what they do and do not value, subsequently motivating a course of action aimed at pursuing the former. Such a motivational function of boredom has obvious benefits for people’s lives for without being bored people may reduce the engagement in behaviors aimed at the attainment of what they find really important. As such, boredom may serve as the proverbial ‘gadfly sting’ that forces people to reconsider their course of action in light of what is meaningful in life.
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One prediction following this suggested functional understanding is that boredom may increase the extremity with which people evaluate the value of their goals. Specially, boredom could lead people to attribute even greater value to those goals that were relatively important to begin with, whereas those goals that were originally deemed not so valuable would be considered as even less significant. Another possible expression of the proposed function of boredom could be that boredom increases not only the value, but also the salience and accessibility of valuable goals while potentially inhibiting those of relatively little value. Clearly, these predictions call for additional empirical research before firm conclusions regarding possible functions of boredom can be made. An exciting future direction for the research presented in the current thesis is therefore to examine the cognitive processes that facilitate the pursuit of valuable goals under boredom.

Is Boredom an Emotion?

Throughout the current research, boredom was usually referred to as an emotion. Is boredom, indeed, an emotion? In 1988, Frijda published his influential work ‘The Laws of Emotion’ in which he suggests that each emotion acts according to a distinct set of rules that is relatively stable across people and time – a controversial statement at the time. During the following decades, many scholars have identified such relatively stable characteristics of emotions. Although definitions of what constitutes an emotion are still widely debated, many defining characteristics of emotions have been offered (see Oatley, Keltner, & Jankins, 2006). For example, relative to moods, emotions are considered to be relatively intense affective states that are short in duration, and that are focused on a particular target or situation (e.g., being angry at the experimenter). Next to these rather general characteristics, specific emotions are usually also assumed to entail certain defining features, including a valence dimension, a level of arousal,
physical expressions, cognitive appraisals, motivations, behavioral consequences, and physiological correlates.

The existing research indeed suggests that boredom satisfies most of the emotion elements highlighted above, and also Chapter 2 points to this conclusion. First of all, boredom can be differentiated from mood states based on the criteria of intensity, short duration, and focus as highlighted above. Fahlman, Marcer, Gaskovski, Eastwood, and Eastwood (2009) claimed that boredom can indeed involve a relatively short-lived experience and many of the boredom measures indicate that boredom can be experienced quite intensely (e.g., Chapter 5, Study 1a). Moreover, it was found in Study 4 of Chapter 2 that people attributed the distinct experience of boredom to the engagement in a particular repetitive task, which suggests that boredom also involves a particular focus.

In addition to the general characteristics of emotions mentioned above, boredom also satisfies many important specific emotion elements. Boredom is a negatively valenced state involving low arousal (e.g., Mikulas & Vodanovich, 1993), it has a typical bodily expression (Wallbott, 1998), it involves a specific pattern of cognitive appraisals (Smith & Ellsworth, 1985), and it also entails particular motivations and behavioral consequences (see Chapter 2). Although not much research has been conducted on the physiological correlates of boredom, recent findings of Mason, Norton, Van Horn, Wegner, Grafton, and Macrae (2007) at the very least suggest that the prolonged exposure to overly rehearsed stimuli leads to activation of specific cortical regions in the brain that are associated with letting one’s mind wonder as the activity at hand does not demand much attention.

Interestingly, although boredom is typically considered to involve a low level of arousal, Acee and colleagues (2010) documented that boredom can in fact arise in some challenging (but meaningless) circumstances, suggesting that the level of arousal
experienced by those who are bored may perhaps vary depending on the specific boring activity at hand. Moreover, bored people also feel restless, as was observed in Chapter 2. Speculatively, although boring activities frequently involve low arousal, the subsequent motivations that boredom triggers might lead to an increased level of arousal. Based on these suggestions, investigating the physiological signature of boredom presents a highly interesting future direction that may unravel the dynamic role of arousal in boredom, especially given that not much is known yet about the physiological correlates of boredom.

An interesting suggestion made by Fahlman and colleagues (2009) is that boredom may in some cases be highly enduring. Specifically, these researchers suggest that boredom can involve “extreme chronic suffering” (p. 307; italics added). An interesting future direction of research is to investigate whether such ‘chronic’ experiences of boredom are qualitatively different from the state boredom experiences that were examined in the current thesis. For example, does enduring boredom differ in focus, motivational character, and physical expressions? Speculatively, the prolonged experience of boredom may involve a reduction of the intense motivational character that is common for state boredom and may subsequently share more similarities with depression, or ennui, especially in terms of the associated feelings of resignation.

**Boredom, Meaning, and Society**

It was suggested in the introduction of the current thesis that boredom is a common feeling, experienced by people of various groups. Given that boredom (proneness) correlates with aversive factors such as depression, aggression, and several addictive behavior (see Vodanovich, 2003), how can the findings reported in this thesis be used to avert these negative phenomena? Moreover, given that boredom is associated with a lack of meaning, how can people in society be empowered in maintaining optimal levels of meaning in life and meaningfulness in their behaviors? Although the
research reported in this thesis did not primarily focus on the practical implementations of meaning-regulation and boredom but was rather aimed at first understanding boredom’s motivated consequences, there are many possible directions for practical implementation following from this research.

The central notion in the current thesis is that those who are bored are in search for behavior that makes them feel meaningful again, and some recent findings also show that an increase of meaning leads to a decreased susceptibility to boredom (Fahlman et al., 2009; Van Tilburg & Igou, 2011f). Based on these observations, implementations aimed at reducing boredom, increasing meaning, and diverting negative boredom consequences may rely on the same course of action: providing possibilities to engage in meaningful behavior. Depending on the specific context this offers an array of possibilities.

Consider the finding that aggression following from boredom experienced by children and adolescents (Merrell, Buchanan, & Tran, 2006). One possibly successful intervention may involve sport events in which these people can identify with their group (teams) in a relatively harmless environment of friendly peer competition. Another intervention might involve offering opportunities to engage in prosocial behaviors that may be directly meaningful for those who are bored, such as volunteering in youth centers or organizing music events. Among some groups of people activities such as friendly sports competition or volunteering in community centers may not always be feasible, for example among some of the elderly. In such cases the observation that boredom can promote the meaning-imbuing experience of nostalgia may provide an important practical implication. Triggering the retrieval of nostalgic memories among elderly people, for example by engaging in conversations about the past, may help they to affirm life’s meaningfulness and reduce boredom. Possibly, this
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may also reduce the relatively high levels of depression observed among the elderly and promote greater well-being (e.g., Montano, 1999).

In essence, practical implementations aimed at reducing boredom, meaninglessness, and aversive boredom consequences may thus focus on offering possibilities to engage in meaningful courses of action. It should be noted, however, that such practical interventions should of course be first examined in more detail before they can be implemented, and the current research provides an excellent basis for follow-up research on these practical extensions.

Conclusions

Past research on boredom has almost exclusively focused on how people’s tendency to become bored is associated with various highly aversive psychological and societal consequences. The research presented in the current thesis took a different perspective on boredom: It was suggested that the experience of boredom motivates people to seek out courses of action that may help them in re-establishing a sense of meaningfulness, and that this self-regulatory process could promote a host of responses, including ingroup favoritism, outgroup derogation, blood donations, charity support, and nostalgia. This research hence indicates that boredom is an experience that can promote many different responses, depending on what courses of action are available for regulating meaningfulness. Boredom may effectively lead to consequences that may be considered to be aversive (e.g., outgroup derogation), but also consequences that may be considered to be beneficial for the self or society (e.g., prosocial behavior, nostalgia). In sum, although it can be unpleasant to feel bored, boredom may sometimes be good for you and others by promoting courses of action that can add to life’s meaningfulness.
References


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Footnote

1 Boredom proneness had a positive total effect on aggression, $B = 0.62$, $S_e = 0.06$, $p < .001$, and predicted a greater search for meaning in life, $B = 0.70$, $S_e = 0.18$, $p < .001$.

Search for meaning in life subsequently predicted higher levels of aggression, $B = 0.04$, $S_e = 0.02$, $p = .05$, and 5,000 accelerated and bias-corrected bootstraps (Hayes, 2009) confirmed the existence of a reliable mediated path of boredom through the search for meaning in life, $0.00 < B_{95} < .08$, $S_e = 0.03$. Moreover, the original effect of boredom proneness on aggression was reduced after inclusion of the mediator, $B = 0.59$, $S_e = 0.07$, $p < .001$. 
Table 1

*Effects Sizes For Manipulation Checks of Studies with Categorical Independent Variables*

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*Effects Sizes For Manipulation Checks of Studies with Categorical Independent Variables*

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Table 2

Effects Sizes For Main Dependent Measures of Studies with Categorical Independent Variables

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**Effects Sizes For Main Dependent Measures of Studies with Categorical Independent Variables**

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### Table 3

*Effects Sizes For Control and Comparison Measures of Studies with Categorical Independent Variables*

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Effects Sizes For Control and Comparison Measures of Studies with Categorical Independent Variables

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**Effects Sizes For Correlational Studies**

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*Effects Sizes For Mediation Analyses Based on $R^2*$

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This thesis incorporates the following five original empirical papers:


During the period of PhD study at the University of Limerick, the following papers were also published or submitted for publication:

BIBLIOGRAPHY


APPENDIX A

APPENDIX A – OVERVIEW OF AUTHOR CONTRIBUTIONS

For the following articles, the author contributions were:

• Wijnand A. P. van Tilburg
  
  *Theory formation, data collection, data analysis, main responsibility in drafting the manuscript, revising manuscript*

• Eric R. Igou
  
  *Theory formation, revising manuscript, project supervision*


For the following article, the author contributions were:

• Wijnand A. P. van Tilburg
  
  *Theory formation, data collection, data analysis, main responsibility in drafting the manuscript, revising manuscript*

• Eric R. Igou
  
  *Theory formation, revising draft manuscript, project supervision*
APPENDIX A

• Constantine Sedikides

  *Theory formation, revising manuscript*

APPENDIX B

APPENDIX B – EVIDENCE FOR ARTICLES’ STATUSES (CHAPTERS 2-6)

Chapter 2:

Wijnand.vanTilburg

From: em.moern.023d622.04df8dI@editorialmanager.com on behalf of Motivation and Emotion
[em.moern.023d622.04df8dI@editorialmanager.com]
Sent: 20 June 2011 13:29
To: Wijnand.vanTilburg
Subject: Decision on your manuscript #MOEM727R3

CC: m.standage@bath.ac.uk

Dear Wijnand Adriaan Pieter Van Tilburg,

I write concerning Manuscript ID MOEM727R3 (i.e., 'On Being Bored: Lack of Challenge and Meaning as Distinct Boredom Experiences') that you submitted to Motivation and Emotion. Following the very minor change I requested to Ms ID# MOEM727R2, I have now recommended to the editor that the article be accepted for publication. Once again, thank you for submitting your revised manuscript to Motivation and Emotion.

You will receive an e-mail from Springer in due course with regards to the following items:

1. Offprints
2. Colour figures
3. Transfer of Copyright

Please remember to quote the manuscript number, MOEM727R3, whenever inquiring about your manuscript.

Sincerely,

Martyn Standage, Ph.D.
Associate Editor, Motivation & Emotion
APPENDIX B

Chapter 3:

Wijnand.vanTilburg

From: em.moem.0.21b4c5.0f0b0c6@editorialmanager.com on behalf of Motivation and Emotion [em.alishn.i.patrud@springer.com]
Sent: 16 March 2011 15:11
To: Wijnand.vanTilburg
Subject: Acknowledgement of Receipt

Dear Wijnand Adriaan Pieter Van Tilburg:

Thank you for submitting your manuscript, "Meaning as Motivation: An Expectancy-Value Approach to the Meaningfulness of Behavior", to Motivation and Emotion.

During the review process, you can keep track of the status of your manuscript by accessing the following web site:

http://moem.edmgr.com/

Your username is: Wijnand.vantilburg
Your password is: XXXXXXXXX

With kind regards,

The Editorial Office
Motivation and Emotion
Wijnand van Tilburg

From: onbehalfof-pspb.acceptedpaperwork@gmail.com on behalf of pspb.acceptedpaperwork@gmail.com
Sent: 19 June 2011 04:10
To: Wijnand van Tilburg
Subject: Personality and Social Psychology Bulletin - Decision on Manuscript ID PSPB-10-615.R1


--Transfer-of-CopyAuthor-CoAuthor-ACCEPTED-PAPER-CHECKLIST-Submission-Guide-SPSP-Student-Pub

09-Jun-2011

Wijnand A. D. van Tilburg
Psychology
University of Limerick
Castlery
Co. Limerick
Ireland

To: "On Boredom and Social Identity: A Pragmatic Meaning-Regulation Approach" (MS # PSPB-10-615.R1)

Dear Mr. Van Tilburg:

I have read the revision of your manuscript and the accompanying cover letter and am pleased to accept your paper for publication in Personality and Social Psychology Bulletin. The revision is responsive to the reviewers' and my concerns or you argue persuasively in the cover letter why we should not be concerned. Congratulations on a fine paper!

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Wijnand van Tilburg
Psychology
University of Limerick
Castlery
Co. Limerick
Ireland
Ms. Ref. No.: JESP-D-10-00920
Title: Why Bored George Helps Others: A Pragmatic Meaning-Regulation Hypothesis on Boredom and Prosocial Behavior Journal of Experimental Social Psychology

Dear Wijnand A. P. van Tilburg,

Your submission "Why Bored George Helps Others: A Pragmatic Meaning-Regulation Hypothesis on Boredom and Prosocial Behavior" has been assigned manuscript number JESP-D-10-00920.

To track the status of your paper, please do the following:

1. Go to this URL: http://ees.elsevier.com/jesp/
2. Enter your login details
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This takes you to the Author Main Menu.
4. Click [Submissions Being Processed]

Thank you for submitting your work to Journal of Experimental Social Psychology.

Kind regards,

Joel Cooper
Editor
Journal of Experimental Social Psychology
APPENDIX B

Chapter 6:

Wijnand.vanTilburg

From: jenseni@missouri.edu
Sent: 29 June 2011 15:01
To: Wijnand.vanTilburg
Subject: Manuscript Submitted

Dear Dr. Van Tilburg,-

PLEASE READ THIS MESSAGE CAREFULLY, AS IT CONTAINS IMPORTANT INFORMATION ABOUT YOUR SUBMISSION.

We are in receipt of your manuscript, In Search of Meaningfulness: Using Nostalgia as an Antidote to Boredom. It has been assigned manuscript number 2011-0795. You should receive some notice of the status of your manuscript within approximately 60 to 90 days. During this period you should not submit your manuscript to another journal. And certainly, if you haven’t heard anything for what seems like a long time, don’t hesitate to email me for an update.

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Sincerely,

Lisa Jensen
Manuscript Coordinator
JFSI: PPID Editorial Office
jenseni@missouri.edu