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OVERVIEW OF CURRENT DIRECTIONS IN BOREDOM RESEARCH

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Preface

The cover of this book features three people sitting together, each lost in their own thoughts and gripped by a palpable sense of boredom. The image captures boredom as a feeling of stagnation and monotony that is all too familiar to many of us. As the quotes in the background of the picture highlight, great minds like Schopenhauer, Tolstoy, and Nietzsche have thought about boredom and have tried to put this feeling into words. The selected quotes emphasize the centrality of boredom in human life (Schopenhauer, characterizing life as a pendulum between pain and boredom), its occurrence when nothing valuable/important is left to do (Nietzsche's god, who is bored after having created the world), or the motivating force it can exert (Tolstoy's desire for desire). These are just three of many aspects that are frequently associated with boredom and that characterize it as a fundamental human sensation.

We are intimately familiar with the feeling of boredom, but editing this book was anything but boring. We had the pleasure of working with boredom experts from a wide range of disciplines who shared their ideas and insights in this volume. We learned a lot about the multitude of perspectives on boredom and about concepts we thought we already knew well. We obtained a unique overview of the various conceptual and methodological approaches researchers use to better understand the causes, mechanisms, and consequences of boredom, and we got a much

better grasp of what our research community still does not know about boredom—and why it matters to close these gaps.

Our hope is that the readers of *The International Handbook of Boredom* will have the opportunity to make similar experiences while exploring the book. However, we acknowledge that not everyone will read the book from cover to cover. We thus decided to devote this final chapter to summarizing the main ideas covered by the different chapters and highlighting their central contributions to the field of boredom research. We did this in a joint collaboration with all of the book's authors to make sure that this chapter does not merely reflect our own views and opinions. To ensure these summaries are as unbiased as possible, artificial intelligence (AI) tools (ChatGPT by OpenAI) were employed to summarize the key points of each chapter, which were then curated by the editors. The authors of each chapter finally checked and revised the summary. The result is a chapter that emphasizes the diversity of boredom research across disciplines, revealing the various directions it currently takes. Our goal is to provide the readers of this volume with an enjoyable journey through boredom research and lay the foundation for future work on this topic.

The editors of The Routledge International Handbook of Boredom
Maik Bieleke, Wanja Wolff, and Corinna S. Martarelli

Part I: foundations

Part I of *The Routledge International Handbook of Boredom* tackles fundamental questions about boredom. It addresses the definition of boredom and its function for human behavior, as well as the historical development of the concept and approaches to measuring it. The section also presents key theoretical perspectives that address the causes, mechanisms, and consequences of boredom. By delving into these fundamental questions, Part I provides an overview of the current conceptual foundation of boredom research.

Wanja Wolff, Vanessa C. Radtke, and Corinna S. Martarelli open this part by providing a definition of boredom and differentiating it from other psychological phenomena. In order to improve clarity and precision, they suggest to define boredom: (a) without including its various correlates into the definition; and (b) by highlighting the mechanisms by which boredom exerts its function. In turn, they define boredom as a state of inadequate function utilization, in which reward prediction error has been minimized. With respect to its function, they propose that boredom drives exploration, thereby playing a critical role in regulating behavior. They highlight that boredom is a distinct and fundamental experience that can prompt a range of affective, cognitive, and behavioral responses, but that boredom itself evades being adequately categorized with labels such as emotion or cognition. This implies that boredom can be experienced at different arousal levels and cause heterogeneous responses, depending on situational and personal factors that gave rise to being bored in the first place. Attesting to boredom's unique relevance, the authors then distinguish boredom from other emotions and states, such as depression, amotivation, apathy, and flow, which it has often been likened to or equated with. The authors emphasize the need to further investigate the regulation of boredom across different timescales, and with clear differentiations between state and trait boredom, in order to further advance our understanding of this complex experience.

In Chapter 3, Corinna S. Martarelli and Nathanael S. Jost provide a comprehensive review of subjective and objective methods for assessing boredom, along with recent advancements in the field. The authors present both self-report measures, like trait and state boredom questionnaires, as well as objective measures, including behavioral, physiological, and neurological approaches.

While subjective measures have been widely used, objective measures that are sensitive to boredom have yet to be established. In the first part of the chapter, the authors give an overview of boredom measures by differentiating trait and state measures, as well as domain-general and domain-specific measures. They provide information about the number of factors, the reliability, and the number of items of widely used and of recently developed scales. In the second part of the chapter, the authors discuss the potential of eye-tracking and pupillometry, as well as neuroimaging and electroencephalography (EEG), as promising tools for tapping into boredom. The authors also raise questions about the potential influence of self-report measures on the experience of boredom and the need to consider both the appearance and duration of boredom episodes. Finally, the authors suggest that a combination of methods and adversarial collaborations between researchers holding opposing views can advance the field of boredom research.

In Chapter 4, Andreas Elpidorou provides a functional account of boredom, in which he explores its relationship to cognitive engagement. He proposes that boredom arises from the need for satisfactory cognitive engagement and that boredom is aimed at fulfilling this need by facilitating behaviors that can restore satisfactory engagement. The chapter highlights the potential harms and benefits of boredom and examines the ways in which boredom can be both harmful and beneficial to the experiencing agent. The chapter further suggests that whatever benefit boredom carries stems from its ability to contribute to self-regulation, but its benefits are contingent upon both environmental and psychological factors. Therefore, it is essential to understand the potential harms and benefits of boredom to manage it effectively. Ultimately, the chapter understands boredom as a complex phenomenon that serves an important function (that is, the regulation of cognitive engagement) and highlights the need to better understand the potential harms and benefits of boredom in order to utilize its advantages and to avoid its negative effects.

In Chapter 5, Heather C. Lench, Noah T. Reed, Tiffany George, Van Dang, and Nazim Asani argue that boredom is a fundamental human emotion whose function lies in motivating people to pursue novelty. The authors explain how boredom arises when a situation no longer evokes emotional responses and is accompanied by negative feelings, reduced attention, increased arousal, and a desire for novelty. From a theoretical perspective, boredom prompts exploration, but how people respond to it determines whether the drive to explore is beneficial or harmful. People who have trouble engaging with new goals and who experience frequent boredom may engage in novel behaviors that have negative consequences, while others quickly engage with new goals and experience boredom as a fleeting state, leading to new opportunities. The authors contend that boredom is essential to human behavior and enables people to respond to their environment in an effective manner. They argue that without boredom, individuals would be unwilling to explore beyond their comfort zone. The authors propose that boredom is a crucial emotion that prompts people to pursue novelty, highlighting its importance for personal and societal growth.

Reinhard Pekrun and Thomas Goetz contribute a unique perspective on boredom in Chapter 6 by discussing it through the lens of Control-Value Theory (CVT). The theory considers boredom an emotion—even though this might require an extension of contemporary definitions of emotions—that can be characterized by a unique configuration of affective, cognitive, motivational, physiological, and expressive components. Unlike other theories of boredom, CVT is concerned with emotions in general and therefore particularly well-suited to distinguish boredom from other emotions. While boredom is assumed to result from interactions of control and value appraisals like many other emotions, for instance, it stands out as unique because it arises in situations of low value. Going beyond control and value as the main proximal antecedents of boredom, CVT also provides a coherent framework for incorporating various distal

antecedents (e.g., social environment), as well as the consequences of boredom (e.g., information processing). By assuming reciprocal feedback loops between boredom and its antecedents and consequences, the theory can account for their complex and dynamic interactions over time, which is the basis for deriving strategies for regulating boredom. Although an extensive body of literature supports the manifold predictions of CVT already, the authors argue that future research will need to rigorously investigate its claims about causal relationships, provide evidence on the assumed temporal dynamics, and check whether interventions based on the CVT help to regulate boredom.

The focus of Chapter 7, written by Eric R. Igou, Muireann K. O'Dea, Katy Y. Y. Tam, and Wijnand A. P. van Tilburg, is on the concepts of boredom and meaning in human life, exploring their relationship to goal pursuits and self-regulation. Boredom is seen as an unpleasant state that signals a discrepancy between one's values and needs. The authors propose that boredom can initiate a search for sources of meaning in an attempt to enhance a sense of meaningfulness. As people are thought to strive for meaning, they strive to avoid boredom through self-regulatory processes such as enhancement, escape, and buffering. The enhancement function initiates a search for sources of meaning, while the escape function elicits strategies that overshadow boredom's existential challenge, and the buffering function shows how sources of meaning suppress boredom, providing psychological buffering. Overall, the authors emphasize the importance of a broader perspective that considers individual, group, and societal factors to understand and address the causes and consequences of boredom. Critical analyses of social-economic structures are also essential to provide sufficient opportunities for meaningful engagement. The chapter highlights the importance of instilling meaning in life through positive and meaningful experiences, which suppress or buffer against boredom and the associated threat to an overall sense of meaning.

Josefa Ros Velasco provides an overview of the history of boredom across various disciplines in Chapter 8, with a special focus on psychopathology. The study of boredom has been a topic of interest for thinkers throughout history, including philosophy, theology, anthropology, sociology, literature, and art. In the 20th century, psychology became the primary discipline responsible for boredom studies. The chapter traces the roots of boredom and discovers similarities across time and fields, including for example the concept of *acedia* developed by the Desert Father Evagrius Ponticus in the 13th century, which he saw as a mental condition similar to modern melancholy or contemporary depression. Boredom lost its medical status as a pathology in the late 19th century but returned to the forefront of mental health concerns in the 20th century. The chapter discusses various definitions of boredom throughout history and the research conducted on the topic. It also highlights the lack of agreement between different approaches and the ongoing efforts of researchers to establish a comprehensive definition of boredom. Overall, the chapter provides a comprehensive overview of the history of boredom across disciplines, with a focus on its relationship with psychopathology.

Part II: correlates

Part II of *The Routledge International Handbook of Boredom* focuses on the various phenomena that contribute to the complex experience of boredom. These include intrapersonal correlates such as self-control, mind-wandering, and flow experience, as well as aggressive behavior as an interpersonal correlate. The section also offers insights into the neural basis of boredom and characterizes boredom proneness. By exploring these various facets of boredom, Part II sheds light on the complex nature of boredom and provides a nuanced characterization of its experience.

Boredom has been frequently and robustly linked to poor self-control. And in Chapter 9, Maik Bieleke, Wanja Wolff, and Alex Bertrams present a comprehensive review of the intricate relationship between boredom and self-control. By considering the application of self-control as a reward-based choice, the authors posit that an individual allocates self-control to a goal based on its associated costs (indexed by effort) and benefits. Boredom, on the other hand, signifies that the individual is not utilizing their resources optimally, which provides information about the decreasing value of a goal and adds additional costs to goal pursuit. As a result, boredom directly influences the level of control that is currently optimal, contributing to the apparent fragility of self-control. The authors conclude that self-control must be fragile to enable individuals to adapt to ever-changing internal and external states (e.g., related to boredom), and to strike an ideal balance between goal-directed behavior and undirected exploration. Furthermore, the authors emphasize that understanding how boredom affects behavior is essential, not just in the field of self-control research, but also in other areas of behavioral science research where participants frequently report to be bored when they participate in research studies.

Addressing a further frequently studied correlate of boredom, Corinna S. Martarelli and Ambroise Baillifard discuss the relationship between boredom and mind-wandering in Chapter 10. In their proposed working model, they explicate the relationship between the actual and intended levels of control of thoughts and how a discrepancy between actual and intended control can lead to boredom. The authors suggest that spontaneous mind-wandering can be a relief from boredom when there is no desire to be more in control, or a reinforcer of boredom when there is a wish to be more in control. They also suggest that boredom might work as an exploratory mechanism that pushes the individual into new thoughts and possible future activities. The authors call for further investigation into the relationship between boredom and mind-wandering, including high-temporal resolution studies to track the dynamics of both states and finding distinct behavioral, physiological, and neuronal markers of both boredom and mind-wandering. They also suggest studying mind-wandering as a possible tool to reduce feelings of boredom and discover new paths. Overall, the chapter highlights the similarities and differences between boredom and mind-wandering, and suggests that mind-wandering may be a response to boredom when no other satisfactory activity is available.

In Chapter 11, David Weibel and Bartholomäus Wissmath delve into a detailed analysis of flow with a particular focus on boredom. Understanding the link between boredom and flow is particularly relevant, because earlier work has tended to treat boredom as a mere opposite of flow, thereby neglecting the relevance boredom has for human behavior. The authors begin by introducing the concept of flow, which refers to a mental state characterized by complete immersion and concentration in an activity, leading to high enjoyment and intrinsic motivation. The experience of flow is a product of a balance between the challenge of the task and the individual's skills. Conversely, when the task is not challenging enough, it can lead to boredom. This chapter explores the relationship between flow and boredom, examining the point at which flow changes to boredom and how an initially satisfying activity can become boring. The authors also discuss the consequences of boredom and flow and suggest strategies to prevent boredom and promote flow. The importance of demand-skill balance in inducing flow in individuals is emphasized, and the study shows that a match between skills and task requirements contributes to the emergence of intrinsic motivation. The chapter also highlights the influence of personality on flow and boredom, noting that personality traits such as openness to experience, extraversion, conscientiousness, and optimism are positively associated with flow. In conclusion, the chapter provides valuable insights into the concept of flow and its relationship with boredom and offers practical strategies to promote flow and avoid boredom.

Chapter 12, by Allison Drody, Ofir Yakobi, and James Danckert, examines the neuroscientific underpinnings of boredom. The chapter discusses functional magnetic resonance imaging (fMRI) and EEG research on boredom, which suggests that boredom is characterized by a disengagement of attention, negative affective evaluations, and poor self-control. The default mode network, associated with internally focused mental activity, is more active during boredom, while task-related event-related potentials (ERPs) are diminished. The authors also note that further research is necessary to fully understand the relationship between neuroimaging results and boredom, particularly in regard to trait boredom proneness. Additionally, the authors briefly discuss research on neuroimaging and boredom in patients with traumatic brain injuries, which suggests that boredom proneness is exacerbated in post-injury and that the orbitofrontal cortex, an area that is critically involved in value and reward processing, is frequently damaged in these individuals. The chapter concludes that the state and trait of boredom cannot be fully explained by challenges with attentional focus alone and suggests that processing reward signals likely plays an important role. The authors also emphasize the need for larger sample sizes and future research in neurological patient populations to further advance our understanding of both state and trait boredom. Overall, this chapter provides central insights into the neural correlates of boredom, and highlights avenues for future research.

Chapter 13, authored by Wijnand A.P. van Tilburg, Andrew B. Moynihan, Christian S. Chan, and Eric R. Igou, provides a detailed overview of boredom proneness, which is a key construct in the study of boredom. The authors delve into the various measures and operationalizations used to assess boredom proneness, its role in predicting relevant outcomes, and its integration into contemporary theories. They point out the difficulties in defining boredom proneness and determining whether the available measures accurately capture its essence. To address this issue, the authors recommend developing better definitions and measures of boredom proneness, updating corresponding measures, and expanding efforts to link boredom to health-related outcomes. They also suggest incorporating boredom proneness more explicitly into contemporary theories of boredom and proposing novel theoretical claims that offer testable predictions. The authors suggest that the study of boredom proneness in the context of physical health has the potential to make new and life-changing contributions. Despite the progress made in understanding boredom proneness, the authors also highlight open questions that still need to be addressed, such as the need for a comprehensive model of boredom proneness and its relationship to personality traits. Overall, the chapter provides a road map for future research on boredom proneness, with a focus on developing a better understanding of the construct, clarifying its position in contemporary theories, and exploring its relationship with health-related outcomes.

In Chapter 14, Christine Emilie Tonne Artak and Stefan Pfattheicher focus on an important interpersonal consequence of boredom by illuminating the relationship between boredom and aggression. Using examples from the past and the present, they illustrate that aggression-based entertainment has always been used as a remedy for boredom. The authors theorize that both direct and indirect forms of aggression provide a particularly easy and quick way of stimulation for most people and thus lends itself well to dealing with boredom resulting from understimulation. There seem to be personal factors that make aggression particularly likely to be used as a remedy for boredom, such as low self-control, a tendency to make impulsive decisions, and sensation seeking. However, the authors point out that even people without a pronounced tendency toward aggression may exhibit aggressive behaviors, given certain circumstances. Dealing with boredom in an aggressive manner can quickly turn into a vicious circle, as engaging in maladaptive responses to boredom, such as aggression, is reinforced over time. This might be

especially relevant when aggression not only satisfies a need for stimulation, but also conveys purpose and a sense of agency to one's actions. Ultimately, the chapter stresses the importance of recognizing and addressing the relationship between boredom and aggression in order to prevent maladaptive responses from becoming ingrained and leading to long-term behavioral problems.

Part III: applications

Part III of *The Routledge International Handbook of Boredom* highlights the various contexts in which boredom can occur. It offers comprehensive depictions of boredom in school, work, and leisure, covering a large part of the areas of life where boredom is typically experienced. The section also shines a spotlight on specific health-related behaviors, such as diet, the role of boredom in aesthetic experiences, and sports and exercise. These chapters highlight that boredom occurs in a wide range of contexts and can have detrimental effects on performance and well-being in these contexts. This implies that interventions aiming to reduce or regulate boredom might be called for. In this vein, one chapter covers how such interventions could be designed. Overall, Part III provides a comprehensive overview of the many contexts in which boredom can arise and offers insights into potential strategies for addressing it.

Starting off the final part of the book in Chapter 15, Thomas Goetz, Lisa Stempfer, Reinhard Pekrun, Wijnand A. P. van Tilburg, and Anastasiya A. Lipnevich provide a comprehensive overview on boredom in the context in which it has probably been studied and noticed the most: education. The authors characterize academic boredom as an emotion and describe it along different dimensions, such as valence and arousal, and psychological properties, such as cognitive and motivational processes. They also discuss various approaches to measuring academic boredom and summarize research that reveals the frequency of students' and teachers' experiences of boredom. The authors then present six theories that address the antecedents of boredom, taking into account diverse factors such as control and value appraisals, the social environment, monotony, lack of meaning, and attentional problems. They also discuss the predominantly negative consequences of boredom in academic settings, presenting research showing its associations with low motivation, learning difficulties, poor self-regulation, cognitive problems, and ultimately, poor performance. However, the authors hypothesize that the detrimental effects of boredom on performance are primarily due to boredom caused by over-challenge, rather than boredom caused by underchallenge, indicating a more nuanced relationship between boredom and performance than commonly assumed. In concluding their chapter, the authors provide an overview of how students can cope with boredom and strategies for preventing and reducing boredom. They also identify numerous areas for future research, calling for novel measurement approaches and study designs that better account for the complexity of boredom and help to establish strategies and interventions for preventing, reducing, and coping with boredom effectively.

Beyond school, boredom can also occur in the workplace, and in Chapter 16, Edwin A. J. van Hooft and Madelon L. M. van Hooft present a systematic review of research on boredom in this context. They summarize different conceptualizations of boredom in work-related research and distinguish boredom from other constructs by characterizing it as a dysfunctional activation of individual abilities. The authors then analyze the recent literature on the causes and consequences of workplace boredom. They found solid evidence for several negative consequences of boredom, in particular poor mental health, but only few studies that emphasized potentially positive consequences of boredom, such as creativity or prosocial behavior. Concerning the causes of boredom, the authors identified various personal, job-related, and social factors that

contribute the occurrence of boredom at the workplace. The authors conclude their chapter by highlighting the importance of a more thorough distinction between various conceptualizations of boredom, accompanied by improved measurement approaches and study designs. Researchers should also investigate the role of arousal and activation in relation to boredom, and explore the impact of work-related boredom on physical health, health behaviors, counter-productive work behavior, and potential positive outcomes. From a practical perspective, the authors suggest various ways in which organizations could prevent and reduce boredom at the workplace and highlight possibilities for employees to effectively cope with boredom.

In Chapter 17, Elizabeth Weybright and Linda L. Caldwell focus on leisure and boredom in youth. The authors highlight how leisure activities can provide a positive environment for personal growth and development, but also expose young people to risky behaviors. The chapter defines leisure both objectively and subjectively, with objective definitions focusing on the type and frequency of activity, while subjective definitions focus on perceived freedom and motivation. The authors present the Leisure Activity, Context, and Experience (LACE) model, which considers intrapersonal, interpersonal, and environmental factors that contribute to adolescent leisure experiences and healthy development. The LACE model emphasizes that positive leisure contexts provide opportunities for autonomy, skill-building, and exploration of identity and gender roles, which contribute to positive youth development. The chapter discusses how parents play a critical role in adolescents' leisure experiences and how parental involvement influences the experience of boredom. The authors also highlight how community resources and opportunities can affect leisure experiences and boredom among rural and urban adolescents. Additionally, the chapter presents two interventions, TimeWise and HealthWise, designed to increase healthy leisure and decrease risky behaviors among adolescents. The chapter emphasizes that understanding the context of leisure boredom and individual differences can promote effective coping strategies and harness the potential positive outcomes of boredom.

The focus of Chapter 18 by Asli Erdemli and Géraldine Coppin is on the relationship between boredom and food intake. The chapter distinguishes boredom's impact from other negative emotions in the eating context and provides a precise analysis of boredom's relation to eating disorders. Studies conducted in various countries show that people consume food—especially snacks—to manage boredom, and this relationship is more pronounced in individuals with higher body mass index (BMI) and eating disorders. High boredom susceptibility is linked to the consumption of dietary supplements and caffeinated beverages, and strategies should be explored to reduce boredom's effects on food intake, especially for high-BMI individuals. Boredom can lead to maladaptive eating behaviors, such as emotional eating and eating expectancies. Eating expectancies are linked to various beliefs about food consumption, such as “eating alleviates boredom.” The chapter also discusses the relationship between curiosity and food consumption. Unsatisfied curiosity can enhance food intake, particularly of high-calorie foods. The type of food eaten may affect curiosity and well-being. Overall, the chapter provides insights into the link between boredom and food intake, and its impact on individuals' physical and mental health.

In Chapter 19, Wanja Wolff, Christian Weich, and Ursula Fischer draw on current definitions and theories of boredom to examine how boredom can play a role in deterring or motivating people to exercise. The chapter provides a review of the literature in three different contexts: physical education, recreational sports and exercise, and performance-oriented sports. With respect to physical education, the review reveals that boredom is prevalent in this context, and that specific properties of physical education classes (for example, the motivational climate in class) are associated with lower boredom. With respect to recreational sports and exercise, the review shows that boredom can be a reason why people do not exercise, whereas for some,

exercise can provide an escape from boring activities. The observation that people might refrain from exercise because to them it is boring is given particular emphasis in light of rising physical inactivity levels around the world. Finally, the authors highlight the emerging research on the link between boredom and sports performance, indicating that boredom matters in competitive sports, as well. Taken together, their chapter highlights that boredom plays a significant role across the three reviewed sports and exercise domains. However, the authors note that research on boredom in sports and exercise is still in its early stages and that many questions remain unanswered. Overall, the chapter provides valuable insights into the relevance of boredom in sports and exercise, emphasizing the need for further investigation in this area.

Carrie Anne Marshall delves into the issue of boredom among individuals who experience homelessness in Chapter 20. Using empirical data from both quantitative surveys and qualitative interviews, the author characterizes boredom as an all-pervasive and existential experience among homeless individuals, with numerous negative impacts on their psychosocial well-being and their mental and physical health. The author highlights that the importance of boredom in the context of homelessness is largely due to a lack of access to meaningful activities. Intriguingly, qualitative and quantitative data from participants demonstrates that when individuals secure housing following homelessness, that boredom is amplified, potentially reflecting a consequence of the loss of routines and structures important for survival during homelessness. Based on these and related findings, a conceptual model is developed to explain the emergence and the consequences of boredom in the context of homelessness. The model proposes that poverty initiates a vicious cycle in which social exclusion leads to boredom, which in turn exacerbates social inclusion by inducing psychological distress and maladaptive coping strategies. Additionally, it is argued that boredom deprives homeless individuals of the resources and opportunities necessary for realizing their potential as human beings. From a social justice perspective, recommendations are made for action in research, practice, and policy to address boredom in the context of homelessness and mitigate its negative impacts and support individuals who experience homelessness in achieving a fulfilling and meaningful life.

In Chapter 21, Aenne Brielmann and Peter Dayan introduce the concept of “aesthetic boredom” which refers to the boredom caused by the currently available sensory input, such as skipping a song on a playlist or scrolling past an image on social media. They present a computational theory of aesthetic value which suggests that sensory experiences are valuable to the extent that they help the sensory system to process the environment more efficiently both now and in the future. The theory proposes that there are two forms of aesthetic boredom: absolute boredom, which arises in response to a single sensory experience when its continued experience leads to a decrease in expected long-term processing efficiency for other likely experiences, and relative boredom, which arises when other immediately or potentially available experiences have sufficiently higher values. The authors argue that boredom serves as a signal for observers that dwelling longer in their current sensory environment is either detrimental or insufficiently advantageous in the long run. Thus, boredom motivates people to seek out new sensory stimulation and helps ensure the continued improvement of long-term processing efficiency. The chapter highlights the importance of understanding the concept of aesthetic boredom, as it has received little attention from the research community despite being a major part of the puzzle of boredom. The authors conclude that despite its negative hedonic tone, boredom is a valuable signal that helps us reach our goals, whether it is to stop with the present experience or explore for new options when the current one is insufficient.

In Chapter 22, Virginia Tze, Patti Parker, and Lia Daniels argue for the development of dedicated interventions to mitigate the negative implications of boredom in academic settings. Despite research focusing on ways to deal with boredom in terms of instructional style, student

coping strategies, and attributional trainings, these initiatives are not sufficient to effectively reduce boredom. Therefore, the authors use the Control-Value Theory as a conceptual foundation to characterize boredom and identify five principles from cognitive-behavioral approaches (i.e., psychoeducation, cognitive restructuring, and relapse prevention) and emotion-regulation practices (i.e., situation modification and attention deployment) as a basis for designing a theory-based boredom intervention. The authors report on the design and initial evidence of the Boredom Intervention Training (BIT) project, which integrates all five principles, as well as additional features, to boost reach and effectiveness, such as creating engaging materials and conveying the intervention online with a digital tutor. Preliminary evidence suggests considerable demand among students for a boredom intervention, and the BIT project has been shown to facilitate learning about boredom as the first psychoeducative step of the intervention. By implementing these suggestions, students are expected to better manage their boredom, replacing it with more adaptive emotions and enhancing their overall educational experience.

Conclusion

We started this book with Bertrand Russell's striking assertion that "escape from boredom is one of the really powerful desires of almost all human beings" (Russell, 1950). What makes this observation particularly noteworthy is that Russell could not draw on a large body of boredom research, but had to rely on his own experience. Still, he dedicated a portion of his 1950 Nobel lecture to emphasize the key role he ascribed to boredom. More than 70 years later, we can resort to a large and steadily growing literature on boredom. A vibrant research community has emerged that studies boredom from a multitude of perspectives and across scientific disciplines. Their findings converge into impressive support for Russell's early conjecture, and each chapter of this book serves a testimonial that boredom is indeed a powerful motivator of human behavior. And yet, each chapter also reveals many fascinating questions about boredom that remain unsolved to this day. We hope that the readers of *The Routledge International Handbook of Boredom* share this fascination with us and use it as a starting point for research that further advances our knowledge about boredom.

Reference

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