

BOREDOM:  
A SIGNAL FOR MEANINGFULNESS MISFIT

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BOREDOM  
A SIGNAL FOR MEANINGFULNESS MISFIT

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Abstract: Boredom at work is a ubiquitous experience. Management research on workplace boredom has focused on factors such as workload or task variety as predictors of boredom and tied the experience to negative outcomes such as safety violations, disengagement, and counterproductive work behaviors (Bruursema, et al., 2011; Game, 2007). As a result, the common advice given to managers is to avoid boredom in the workplace. However, this advice may be premature. Conceptual work from sociology suggests boredom may also be caused by *meaninglessness* (Barbalet, 1999), acting as a signal that the present task might not be valuable or worthwhile. Further, boredom may act as a catalyst for positive outcomes. The purpose of this project is twofold: First, to test the proposition that boredom acts a signal for meaninglessness. Second, to explore the bright side of boredom at work. Results indicate that meaningfulness does predict boredom, specifically in situations when work is less meaningful than desired. Although the final study did not find a positive relationship between boredom and positive work outcomes, this research still makes three important contributions. First, studies 1a-c refine a definition of boredom and develop a corresponding measurement scale, setting the foundation for future research. Second, this work acknowledges that boredom stems from how employees come together with their work environment. Thus, this research offers a nuanced look at what is optimum. Third, this study makes a practical contribution by offering a new perspective for managers. In taking a nuanced view of how well employees fit within their environment, employers can be encouraged to foster workplaces where their bored employees can flourish.

## TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
II. REVIEW OF THE LITERATURE.....	5
A Brief History of Boredom in the Literature.....	5
Boredom: What is it?.....	6
Boredom in Circumplex Models.....	6
Boredom in Terms of Engagement.....	7
Boredom as a Form of Cognitive Appraisal.....	7
Defining Boredom.....	8
The Role of Meaning and Person Environment Fit.....	10
III. STUDY 1A: EXPLORATORY FACTOR ANALYSIS OF EXISTING SCALES.....	14
Methods & Procedure of Study 1a.....	15
Transparency & Openness.....	16
Results & Discussion of Study 1a.....	17
IV. STUDY 1B: SCALE DEVELOPMENT AND CONTENT VALIDITY.....	19
Methods & Procedure of Study 1b.....	19
Transparency & Openness.....	19
Results & Discussion of Study 1b.....	20
V. STUDY 1C: TEST OF NOMOLOGICAL NETWORK OF BOREDOM.....	21
Methods & Procedure of Study 1c.....	24
Transparency & Openness.....	25
Results & Discussion of Study 1c.....	25

VI. STUDY 2: THE EFFECT OF MEANINGFULNESS MISFIT ON WORKPLACE BOREDOM.....	29
Hypothesis Development.....	31
Effects of Fit on Boredom.....	31
Effects of Deficiency and Excess on Boredom.....	32
Boredom as a Mediator.....	34
Proactive Personality as a Second Stage Moderator.....	36
Perceived Organizational Support as a Second State Moderator.....	37
Alternative Mediators.....	37
Alternative Mediator A: Positive Affect.....	38
Alternative Mediator B: Absorption.....	39
Methods & Procedure of Study 2.....	40
Transparency & Openness.....	42
Results & Discussion of Study 2.....	42
CFA.....	43
Polynomial Regression and Response Surface Analysis.....	44
Hypothesized Model.....	45
Examination of Alternative Mediators.....	48
Discussion of Study 2 Results.....	50
VII. GENERAL DISCUSSION.....	52
Contributions, Limitations, and Future Research Directions.....	52
Implications for Management Practice.....	55
VIII. CONCLUSION.....	56
REFERENCES.....	57
FOOTNOTES.....	65
APPENDICES.....	86
Appendix A. Existing Boredom Measurement Scales.....	86
Appendix B. Boredom Items Identified in Study 1a and Used in Studies 1b, 1c, and 2...88	88
Appendix C. Measurement Scales in Studies 1c and 2.....	89
Appendix D. Triple Interaction Supplemental Analysis.....	91

## LIST OF TABLES

Table	Page
Table 1. Common Definitions of Boredom.....	66
Table 2. Subdimensions in Existing Boredom Measures and Their Relationship with Boredom..	68
Table 3. Existing Measures of State Boredom.....	69
Table 4. Subject Matter Expert Ratings of Correspondence between Items and Construct Definitions.....	70
Table 5. Nomological Network for State Boredom.....	71
Table 6. Study 1c CFA Goodness of Fit Statistics.....	72
Table 7. Study 1c Correlation Table.....	73
Table 8. Study 2 Correlation Table.....	74
Table 9. Study 2 CFA Goodness of Fit Statistics.....	76
Table 10. Study Standardized Loadings for CFA Test.....	77
Table 11. Results of Polynomial Regression Analysis for Meaningfulness Needs-Supplies Fit..	78
Table 12. Response Surface Results.....	79
Table 13. Boredom Moderated Mediated Model Results.....	80
Table 14. Positive Affect Moderated Mediated Model Results.....	81
Table 15. Absorption Moderated Mediated Model Results.....	82

## LIST OF FIGURES

Figure	Page
Figure 1. Hypothesized Model.....	83
Figure 2. Scatter Plot.....	84
Figure 3. Polynomial Regression and Response Surface Analysis Results.....	85



## CHAPTER I

### INTRODUCTION

“Boredom emerges from the way we come together with the world. ... When there is a strong mismatch, boredom lurks.” (Danckert & Eastwood, 2020, p. 47).

Imagine you are working on a task. The task itself isn't inherently *bad*. It's challenging and varies enough from what you normally do at work. You just don't see the point in *why* you must complete it in the first place. This task isn't meaningful to you or your career in any way. As you continue working, you find yourself simultaneously feeling sluggish *and* restless. You have determined this task is pointless and are now overcome by a strong desire to do something—*anything*—to replace this uncomfortable feeling. You can sit here and feel frustrated or cynical about your work, maybe even consider leaving and finding a new job entirely. Alternatively, you can help a coworker or complete that optional skill building training, maybe even come up with some innovative ideas to improve your workplace.

Boredom at work is a ubiquitous experience among employees. Everyone has found themselves bored at work at some point, perhaps working on a task, during a meeting, or interacting with a client or customer. Boredom is a negative, purposeless state that can vary in accompanying arousal from feeling lethargic to agitated (Danckert, Hammerschmidt, Marty-Dugas, & Smilek, 2018). It has been conceptualized as, “the aversive experience of wanting, but being unable to, engage in satisfying activity” (Eastwood, Frischen, Fenske, & Smilek, 2012, p.

482). Workplace boredom has been little studied in management with existing research primarily focusing either on workload or task variety job characteristics as precursors to boredom (Hill, 1975; Smith, 1953), or on negative outcomes such as safety violations, disengagement, and counterproductive work behaviors (Bruursema, Kessler, & Spector, 2011; Fisher, 1998; Game, 2007; Locke & Bryan, 1967; Mael & Jex, 2015). The conclusion is that boredom at work leads to unfavorable outcomes and managers should create work environments with high variety or minimal downtime to avoid employees' experiencing boredom. However, this presumption may be premature in three ways.

First, research in psychology, sociology, and philosophy has suggested that in addition to stemming from demands in the work environment (i.e., task variety, workload, etc.), boredom can also emerge from a lack of meaningfulness. Originally proposed by Barbalet (1999) and more recently gaining traction (Danckert, Mugon, Struk, & Eastwood, 2018; Elpidorou, 2018; Fisher, 2018; Tam, van Tilburg, Chan, Igou, & Lau, 2021; van Tilburg & Igou, 2011), this line of theorizing proposes boredom acts as a signal indicating that the present task is not meaningful. Considering the role of meaningfulness as a cause for boredom changes the advice given to practitioners; rather than focusing on increasing workload or task variety, focus on infusing meaning into work.

Second, people are different, they vary both in their needs as well as perceptions of how well their environments match their needs (Muchinsky & Monahan, 1987; van Vianen, 2018). The joint effect of both person characteristics and environmental characteristics on boredom has been overlooked. Yet, boredom is directly tied to how people engage with their environments. Thus, considering both the person and their environment likely offers a more nuanced explanation for what situations give rise to boredom.

Third, boredom research in management—and adjacent fields—has been largely limited to studying negative consequences including counterproductive work behaviors (Andel, Pindek, & Arvan, 2022; Game, 2007), workplace safety violations (Bruursema, et al., 2011), and lower motivation (Shin & Grant, 2019). Recent works have suggested exploring the positive consequences of boredom (Danckert, Mugon, et al., 2018; Elsbach & Hargadon, 2006; Johnsen, 2016) and empirical papers have already begun taking this avenue (Park, Lim, & Oh, 2019) finding positive links between state boredom and creativity. In short, the “bright sides” of boredom have been largely understudied in management.

The purpose of this project is twofold: First, to test the proposition that boredom can stem from a lack of meaningfulness by mapping the link between need fulfillment and boredom. And second, to explore the bright side of boredom at work. In doing so, this research makes three primary contributions. First, by adopting a need-fulfillment lens (Muchinsky & Monahan, 1987), this work acknowledges that boredom stems from how employees come together with their work environment. Thus, in contrast to common thinking that “more is better” in reducing boredom (i.e., more task variety, more workload, etc.) this research offers a more nuanced look at what is optimum. People vary in their needs (Edwards, 2008; Kristof-Brown & Guay, 2011; van Vianen, 2018); what is fulfilling and satisfying for one employee may be unfulfilling and boredom inducing for another. Second, the present research is at the forefront of studying the potential positives that stem from boredom. This challenges current thinking in management that bored employees will solely engage in negative behaviors. Third, this study makes a practical contribution by offering a new perspective for managers: increasing workload to prevent boredom is not always the right solution. Instead, by taking a more nuanced view of how well

employees fit within their environment, employers can be encouraged to foster environments where their bored employees can thrive.

## CHAPTER II

### REVIEW OF THE LITERATURE

#### **A Brief History of Boredom in Management**

In the 1950s and 1960s, workplace boredom piqued the interest of management scholars. Researchers were primarily interested in the relationship between employee experienced boredom and task performance, especially in the context of hourly production within factories. Boredom was linked to fatigue, variability in production quality and quantity, increase in gossip (i.e., counterproductive work behavior), and restlessness (Kerr & Keil, 1963; Locke & Bryan, 1967; Roy, 1959; Smith, 1953). With the advent of job design theories in the 1970s (Hackman & Oldham, 1976), the final consensus was drawn; boredom was disadvantageous to organizations and characteristics of the job should be modified to avoid employees feeling bored (Hill, 1975).

Since then, research on boredom in management has been sporadic and primarily focused on its negative consequences such as safety violations (Game, 2007), lower motivation (Shin & Grant, 2019), and counterproductive work behaviors (Bruursema, et al., 2011). Recent work has begun to explore potential positive outcomes of boredom such as creativity (Park, et al., 2019). In short, the common advice given to managers and practitioners today has largely remained unchanged since first studied in the 1950s—avoid boredom in your workplace!

## **Boredom: What Is It?**

### **Boredom in Circumplex Models**

Dominant models organizing emotions use circumplex frameworks, incorporating valence and arousal as the axes to describe the emotions displayed within them (Russell, 1980; Tellegen, 1985). Typically, management conceptualizations place boredom as a negative, low arousal experience (Baratta & Spence, 2018; Fisher, 1993; Russell, 1980). However, these circumplex models—and subsequent characterizations of boredom—are likely deficient in two ways. First, the density hypothesis (Unkelbach, Fiedler, Bayer, Stegmüller, & Danner, 2008) states that positive stimuli (e.g., experiences, emotions) are cognitively interpreted and spatially stored as being more similar than negative stimuli. Experimental evidence supports this hypothesis (Koch, Alves, Kruger, & Unkelbach, 2016), suggesting negative valence emotions—including boredom—likely have a greater cognitive spread compared to positive valence emotions which are likely to be more tightly coupled. Said differently, the density hypothesis would suggest positive emotions are more tightly linked and therefore do not take the full 180-degree space allocated in the circumplex model, whereas negative emotions likely do take the full 180-degrees allocated. Thus, resulting in a shape that is not circular.

A second deficiency of circumplex models is that emotions are tied to a single arousal level, high or low. Yet, in contrast to boredom's place as a low arousal emotion on circumplex models, physiological evidence has demonstrated people can experience either low or high arousal accompanying state boredom (London, Schubert, & Washburn, 1972; Merrifield & Danckert, 2014; van Hooft & van Hooff, 2018). Thus, "in terms of arousal, boredom is unique among emotions in that arousal level may vary from very low (passive resignation, drowsiness) to quite high." (Fisher, 2018, p. 73). This variability in boredom and accompanying arousal level

(e.g., high or low) is consistent with research on other emotions that shows inconsistent patterns of physiological expression accompanying self-reported emotions across people (Hoemann, et al., 2020). Therefore, circumplex models of emotion do not adequately represent the experience of boredom.

### **Boredom in Terms of Engagement**

An alternative to circumplex models is to describe emotions in terms of engagement with a target in the environment (Frijda, 2006; Solomon, 2004). Although emotions can readily be framed in terms of what target they are engaging with, boredom proves to be unique in that it is *without* a clear, readily identifiable target with which it is engaging. For example, frustration and anger can be tied to a clear target that is blocking goal attainment. Although boredom has similarly been linked to the context of motivation and goal pursuit (Bench & Lench, 2013), it does not necessarily have to be tied to a specific target, such as a goal or hinderance to achieving that goal. Instead, boredom is reflective of an evaluation of the world around oneself. Therefore, boredom is an experience distinct from emotions that can be readily framed in terms of engagement with a target. In sum, boredom does not conform to either circumplex models or engagement frames of emotions.

### **Boredom as a Form of Cognitive Appraisal**

Instead of examining boredom through an emotion lens, Eastwood and Gorelik (2019) consider the role of cognition in the boredom experience. Describing boredom as the “feeling of thinking,” they suggest boredom arises when someone wants to engage but is unable to do so (Eastwood & Gorelik, 2019, p. 55). As such, boredom is the negative, uncomfortable feeling that comes from a complex evaluation of the world around oneself. This idea is consistent with other feedback models of attention where boredom indicates whether the current situation is engaging,

meaningful, or fulfilling (Tam, et al., 2021). In this view, boredom is more than an emotion because it holds a cognitive, evaluative component about the environment.

In considering boredom through a cognitive appraisal lens, management scholars may readily think of Csikszentmihalyi's *Finding Flow* (1997). "Flow" is said to arise when someone is completely engaged with the present task— their skills are optimally challenged. It is the absence of boredom. Eastwood and Gorelik (2019) suggest boredom signals that the mind has stopped flowing-- that is, "boredom is a feeling of thinking that provides feedback about our thinking" (p. 58). Although flow models traditionally position boredom as the result of underutilized skills in a task (Csikszentmihalyi, 1997), it is also likely that boredom can result from *overutilized* skills as well. Sociologist Orinn Klapp suggested in his 1986 book *Overload and Boredom* (1986) that boredom is a reaction to situations of being inundated with information. Indeed, both theory (Pekrun, 2006) and empirical evidence from psychology and education supports this notion that boredom occurs from both under and overchallenging situations (Pekrun, Goetz, Daniels, Stupnisky & Perry, 2010; Struk, Scholer, & Danckert, 2021). In line with this reasoning, the present research conceptualizes boredom as a cognitive appraisal of the environment rather than as an emotion.

### **Defining Boredom**

'Boredom' has only recently entered the English lexicon. Danckert and Eastwood (2020) trace the origins of boredom to Charles Dickens' *Bleak House* which was published in 1852. However, the authors also point out that the concept of boredom existed prior to then as *ennui* (feelings of dissatisfaction), *tedium* (state of monotony), and *acedia* (spiritual sloth) (Danckert & Eastwood, 2020), *for a complete historical review of boredom see Toohey (2011)*. Considered one of the neglected states (Elpidorou, 2020), boredom has been studied as existential boredom



(Svendson, 2005), trait boredom or boredom proneness (Farmer & Sundberg, 1986), and state boredom (Baratta & Spence, 2018; Eastwood, et al., 2012; Fisher, 1993). The present research focuses on state boredom within the workplace context.

Although little studied in management since the mid-20<sup>th</sup> century, state boredom has seen a resurgence over the last decade in related fields such as psychology, sociology, education, and philosophy. There are a variety of ways scholars have defined boredom. Some define boredom as lack of meaning (Barbalet, 1999; van Tilburg & Igou, 2012), others as lack of meaning *and* difficulty concentrating (Fisher, 1993; Westgate & Wilson, 2018), others propose multiple types of boredom (Harju & Hakanen, 2015; Goetz, et al., 2014; Mael & Jex, 2015), and others still see boredom as a mechanism motivating people to seek something more meaningful (Elpidorou, 2018; 2020; 2021).

With the goal of arriving at a revised, simple definition of boredom, I followed the recommendations of Podsakoff, MacKenzie, and Podsakoff (2016). In reviewing the literature on state boredom in management and adjacent fields, I identified attributes of boredom in ten commonly accepted definitions, see Table 1. This process revealed two reoccurring attributes of state boredom: (1) an unpleasant feeling and (2) a longing to be occupied. These two key attributes appeared in definitions more frequently than any other attribute. Whereas other attributes each appeared in only one to three definitions, both of these key attributes appeared in at least six out of ten examined definitions.

Wanting to generate a preliminary definition encompassing those two key attributes, I examined existing definitions to check if any fulfill that objective. I initially was drawn towards the definition developed by Eastwood et al. (2012): “*the aversive state of wanting, but being unable, to engage in a satisfying activity* (p. 483).” However, upon closer inspection, there are

two issues with this definition. First, it incorporates the idea of *being unable* to engage in an alternative activity. This may not necessarily hold true in the workplace where employees may have multiple tasks to choose from and elect to work on the task eliciting boredom. Second, the Eastwood, et al. (2012) definition specifies wanting to engage in a more satisfying activity. This may unnecessarily narrow the alternative tasks employees experiencing boredom seek out to only those that are more satisfying. It is conceivable that a bored employee may somewhat begrudgingly offer a coworker help, engage in gossip, or other counterproductive behavior, etc., not because it is more satisfying but simply because it is anything to do besides the current (boring) task. Therefore, I revised their definition as: *boredom is the unpleasant feeling of longing to be occupied*. This definition solely reflects the identified key ideas and avoids conflating boredom with other extraneous boundary conditions.

### **The Role of Meaning and Person Environment Fit**

The study of boredom in management has been limited to examination in the context of work demands, primarily to an unstimulating or uninteresting environment (Locke & Bryan, 1967). In contrast, scholars in philosophy, psychology, and sociology have taken the view that boredom may be tied to meaningfulness. This alternate perspective suggests boredom may act as a signal that the task at hand is without meaning (Barbalet, 1999; Elpidorou, 2017; Mael & Jex, 2015; Tam et al., 2021; Westgate & Wilson, 2018). Barbalet writes, “boredom is an emotional safeguard of meaningfulness and a defense against meaninglessness” (1999, p. 633). In this way, boredom not only alerts a person to the present meaninglessness of a situation, but boredom also motivates them to engage with an alternative task that is more meaningful (van Tilburg & Igou, 2012). For example, in Roy’s (1959) “Banana Time,” factory workers devised various games and

“times” throughout the workday to break up the monotony of their work and create more meaning in their jobs as a response to boredom.

Although boredom has been conceptually discussed alongside perceptions of meaninglessness for at least twenty years in sociology, philosophy, and psychology, I have only found one empirical test of this relationship<sup>1</sup>. Across two studies, Chan and colleagues (2018) found state boredom was negatively related to perceived situational meaningfulness, even after controlling for sadness, personality, and boredom proneness. Although this paper provides initial empirical evidence for a relationship between meaningfulness and boredom, there is still much left to be understood. Chiefly, perceived meaningfulness varies between people and across situations (Vogel, Rodell, & Sabey, 2020). Some people have a strong desire for meaningfulness from their work (i.e., a strong meaningfulness need), preferring work that is important, worthwhile, and valuable to them. Conversely, other people have a weaker desire for meaningfulness from their work (i.e., a weak meaningfulness need), perhaps instead preferring work that offers high pay, autonomy, or prestige, for example. Similarly, just as meaningfulness needs vary between people, perceived meaningfulness supplied by a task can vary between people as well. A person working on a task can find it incredibly meaningful (i.e., strong meaningfulness supplied) while another person working on the same task can find it incredibly devoid of meaning (i.e., a weak meaningfulness supplied).

Since boredom is inherently a reaction to and assessment of the environment (Danckert & Eastwood, 2020), the relationship between perceived meaningfulness and boredom should be studied together, incorporating both meaningfulness desired and supplied to predict boredom. To understand this joint influence of meaningfulness needed and supplied by the environment on boredom, I propose adopting a Person-Environment Fit (PE Fit) approach. PE Fit examines the

joint effect of both person characteristics and environmental characteristics (Edwards, 2008; Muchinsky & Monahan, 1987; van Vianen, 2018); suggesting the two combined are better predictors of an outcome than each independently. Person and environmental characteristics are referred to as needs and supplies, respectively, in need-fulfillment models (Edwards, 2008).

Imagine an employee with a *strong* desire for meaningfulness working on a task that offers *low* meaningfulness: the meaningfulness supplied by the task is deficient of their needs. For example, a nurse who wants their work to have great value, but feels like their current task, perhaps cleaning equipment, is not. This type of situation is likely unfulfilling for the employee (McClelland, 1987; Ryan & Deci, 2000) and consequently, may leave them feeling bored. In an opposing scenario, imagine an employee with a *weak* desire for meaningfulness working on a task that offers *high* meaningfulness: the amount meaningfulness supplied by the task is in excess of their needs. For example, imagine a nurse who does not need tremendous value in their job tasks, who finds themselves working in the Emergency Room during a major trauma. This type of situation can become burdensome and draining for the employee (Hobfoll, 1989; 2001; Hobfoll, Freedy, Lane, & Geller, 1990) and, consequently, may leave them feeling dissatisfied or even bored.

Although the first situation more readily comes to mind when thinking of boredom, the second situation is also plausible. We know that when environmental demands exceed people's wishes, such as in task difficulty, that such situations are taxing on them and boredom arises (Raffaelli, Mills, & Christoff, 2016; Tze, Daniels, & Klassen, 2016). It is conceivable that the same pattern occurs when environmental supplies, such as meaningfulness, exceed desired amounts, leaving employees feeling bored.

In the quote opening this manuscript, Danckert and Eastwood inherently propose a need-fulfillment model where incongruence between a need and corresponding environmental supply (i.e., misfit) results in boredom. Therefore, to accurately assess drivers of boredom, I must consider the joint effect of both needs and supplies together. Specifically, when there is a mismatch between meaningfulness desired and supplied (i.e., meaningfulness supplied is in excess or deficient of desired amounts) boredom occurs. Thus, the present study utilizes a PE Fit need-fulfillment framework to test the relationship between meaningfulness need fulfillment and workplace boredom.

## CHAPTER III

### STUDY 1A

#### **Boredom Scale Development: Studies 1a-c**

##### **Study 1a: Exploratory Factor Analysis of Existing Scales**

Boredom has been defined and conceptualized in a variety of ways; therefore, it is unsurprising that corresponding measures of the construct vary wildly in the content they capture. The purpose of Study 1a is to determine if, and how, existing items from boredom measures converge. This process will be informative of the status of the literature's existing state boredom measures.

Much of the guidance on scale development recommends developing reflective measures. Reflective measures are comprised of items that mirror the definition of the construct. It is assumed that the items in a reflective measure are interchangeable and equally good at capturing the content of the construct (Edwards, 2011; Edwards & Bagozzi, 2000). Sometimes referred to as definitional correspondence (Colquitt, Sabey, Rodell, & Hill, 2019), this is used as a basis for establishing construct validity of the measure. Boredom poses certain challenges to creating this type of a reflective measure. As a form of cognitive appraisal, boredom is a complex evaluation of both the world and what the self wants. This process, and any accompanying feelings, can vary from person. For example, one person may find the experience of boredom as marked by lethargy and time moving slowly while another person may find the experience as marked by

restlessness and inattention. Thus, a measure that adequately encompasses the variance in the experience of boredom may result in items that are not necessarily interchangeable or reflective of a single definition.

Adjacent to the scale development guidance suggesting researchers generate reflective items of a single definition, is the recommendation that items be reflective of the *global* experience of a construct *in addition to* the unique *subdimensions* of the experience. This type of measurement model is based on the logic that in order to build construct validity, measurement items should simultaneously include, “different levels of the hierarchy in which they are embedded” (Clark & Watson, 2019, p. 1414). This approach is consistent with the goal of generating items which “reflect relevant characteristics from the [construct’s] domain” (Cortina, et al., 2020, p. 1353). In the present case, boredom is the higher order, or global, experience encompassing lower order experiences, or subdimensions, such as lethargy, restlessness, inattention, time moving slowly, etc. Thus, this type of measurement model is rooted in careful conceptualization on behalf of the researcher. The purpose of Study 1a is to identify which subdimensions are necessary to include in order to capture the experience of boredom.

### ***Methods & Procedure of Study 1a***

Adult, full-time workers were recruited from CloudResearch to take a survey on Qualtrics in exchange for \$7 (*for meta-analytic support finding no difference between conventional data and online panel data see* Walter, Seibert, Goering, & O’Boyle, 2019). The average age was 40.82 (SD=11.07) and 51.2% were male. The demographic breakdown was as follows: Asian 8.2%, Biracial 3.5%, Black or African American 10.5%, Hispanic/Latino 4.4%, Middle Eastern 0.3%, Native American 0.6%, Native Hawaiian or Pacific Islander, 0.3%, White or Caucasian 71.9%, and Other 0.3%. The average number of hours worked per week was 41.20

(SD=7.78) with an average tenure of 73.20 (SD=69.92) months with the organization.

Participants held diverse jobs including line cooks, receptionists, teachers, software developers, and healthcare workers.

There were two parts to this survey. In Part I, participants were asked, “In the past week in your job, which of the following types of tasks did you do (check all that apply): (a) uneventful and dull, (b) typical and routine, and/or (c) unusual and interesting. Participants were then randomly assigned to write about one of the types of tasks they selected. The breakdown of participants in each writing conditions was as follows: uneventful and dull (14.3%), typical and routine (69.9%), and unusual and interesting (15.8%). The uneven distribution between conditions rationally indicates most participants reported having a typical week at work. Participants also reported when the task occurred in the past week, with most participants saying the task occurred either today (8.5%), yesterday (41.8%), or 2 days ago (18.7%). The remaining participants reported the task as occurring between 3 and 7 days ago (31%). In Part II of the survey, participants were asked to think about the task they just wrote about and describe how they felt while working on that task. The survey was comprised of items from five existing state boredom measures, see Appendix A, as well as the 10-item PANAS (Thompson, 2007) and a single item global item of boredom repeated twice in the survey, “I feel bored.” At the end of the survey participants were asked which topic they were asked to write about as a manipulation check.

### ***Transparency & Openness***

I described the sampling plan and all measures in the study. Data and analysis code are not currently available on any data repository. Data were analyzed using Mplus v8.1 and



SPSSv27. This study's design and its analysis were not preregistered. This data collection was approved by the institutional review board.

### ***Results & Discussion of Study 1a***

The number of participants who took the survey was 375. Data was checked for careless responding following best practices (DeSimone & Harms, 2018; DeSimone, Harms, & DeSimone, 2015; Meade & Craig, 2012) using the following indicators: use data question (1:7 scale), attention checks, manipulation checks, and response times on individual pages as well as the total survey duration. In addition, responses to the writing prompts were read for clarity and comprehension. Participants who failed at least two data screening indicators were removed from the sample, leaving a final sample size of 342.

To identify which subdimensions of boredom most closely related to the global experience of boredom, two process were used in tandem. First, all items were examined and assigned a subdimension label based on the discretion of the researcher. Items were labeled to the following subdimensions: depression, disengagement, engagement, high arousal, inattention, low arousal, task significance, task variety, time drag, and workload. Each subdimension was then described in its relation to the global construct of boredom, see Table 2. Simultaneous to substantively examining each item, the data was analyzed in Mplusv8.1. Initially, all 69 items were loaded onto a single factor, boredom. The first two items entered into the analyses were the repeated, global "I feel bored" items.

Determining which items to keep or remove from analysis was based on looking at both the unstandardized loadings and the corresponding subdimension label. Subdimensions that were determined to be antecedents of boredom were removed (workload, task variety, task significance, depression). In a subsequent model, items that were semantically nearly identical

were dropped. This was to ensure that the full range of the boredom experience was captured in the fewest number of items. For example, an item from the Fahlman, et al. (2013) measure, “time is moving very slowly,” and an item from the Reijseger, et al. (2013) measure, “at work, time goes by very slowly” were determined to be nearly identical so one was randomly dropped from further analysis. The top 21 items which consistently strongly loaded ( $\lambda > .75$ ) onto the single factor of boredom represented the following subdimensions of boredom: time drag, high arousal, low arousal, and inattention, see Appendix B for boredom items.

The purpose of S1a was to determine if, and how, items from existing measures of boredom converge. The results from this study indicate a wide variety of subdimensions are present in existing measures. Importantly, some of these dimensions are distinct from boredom and should be excluded from use in the development of a future scale, such as the use of antecedents of boredom like workload or task variety. In addition to potential theoretical and conceptual shortcomings, a closer inspection of existing measures revealed various methodological issues as well<sup>2</sup>, *see Table 3 for a complete review of existing measures of state boredom*. Thus, it was determined a revised scale of boredom needed to be developed, one that reflected the full domain of boredom. The top 21 loading items from this study representing four subdimensions of boredom were taken as an initial item pool for Study 1b.

## CHAPTER IV

### STUDY 1B

#### **Study 1b: Scale Development and Content Validity**

##### ***Methods & Procedure of Study 1b***

Subject Matter Experts (SMEs) were invited to participate in a survey where they rated definitional correspondence between the proposed boredom items, along with two randomly selected items from each of the following measures related to boredom: absorption (Schaufeli, Bakker, & Salanova, 2006), anxiety (Harmon-Jones, Bastian, & Harmon-Jones, 2016), apathy (Frijda, 1987), and emotional exhaustion (Maslach, Jackson, & Leiter, 1996). SMEs compared each item to the proposed boredom definition as well as definitions of emotional exhaustion and absorption on a scale of 1 (not at all similar) to 7 (very similar) (Colquitt, et al., 2019) and were also given the opportunity to provide feedback.

##### ***Transparency & Openness***

I described the sampling plan and all measures in the study. Data and analysis code are withheld to preserve participant anonymity and adhere to IRB recommendations. Data were analyzed using excel. This study's design and its analysis were not preregistered. This data collection was approved by the institutional review board.

### ***Results & Discussion of Study 1b***

44 SMEs were invited to participate, and 26 took the survey, a response rate of 59%. For each item presented to the SMEs, the average rating, observed variance, interrater agreement ( $r_{WG}$ ), Hinkin Tracey Correspondence, and Hinkin Tracey Distinctiveness was calculated (Bliese, 2000; Colquitt, et al., 2019; James, Demaree, & Wolf, 1984; LeBreton & Senter, 2008). This was done three times since each item was presented alongside three definitions. The comparison value for  $r_{WG}$  was set to four since the survey was on a 7-point scale (LeBreton & Senter, 2008). In addition, an analysis of variance (ANOVA) test between means was conducted for each item, see Table 4. The items with the highest ratings were kept with the goal of arriving at a structure of three to four items per subdimension, see items in bold in Table 4.

## CHAPTER V

### STUDY 1C

#### **Study 1c: Test of the Nomological Network of Boredom**

Boredom exists in a network of related constructs that are conceptually similar in definition or in function but are distinct. By testing the relationship between workplace boredom and other constructs from its nomological net, it provides evidence of discriminant and convergent validities. Below I present the hypothesized strength (weak [ $r^2 = .1 - .3$ ] or moderate [ $r^2 = .4 - .6$ ]) and direction (positive/negative) between boredom and its related constructs, *see Table 5*.

Absorption. While working on job-related tasks, employees may experience absorption, “being fully concentrated and happily engrossed in one’s work, whereby time passes quickly and one has difficulties with detaching oneself from work” (Schaufeli, et al., 2006, p. 702). This cognitive state is in many ways distinct from the experience of boredom. Whereas absorption is a positive state marked by time passing quickly, boredom is a negative state marked by a slow passage of time. In addition, employees experiencing absorption will be fully immersed in their work and have difficulty distancing themselves from the task. Employees experiencing boredom will experience no such difficulty. Thus, I predict a negative, moderate relationship between absorption and boredom.

Apathy. Certain work tasks or situations may evoke feelings of apathy, a lack of interest or motivation (Goldberg, Eastwood, LaGuardia, & Danckert, 2011). Boredom, too, “includes an experience of dullness or lack of vital interest in events of engagements. ... [However,] boredom, but not ennui [i.e., apathy], is a feeling that expresses a dissatisfaction with the lack of interest in an activity of condition.” (Barbalet, 1999, p. 634). Thus, whereas apathy is always a passive lack of desire to engage with the environment, boredom, particularly when accompanied by high arousal, is marked by a motivation and longing to engage. Consistent with existing research (Goldberg, et al., 2011), I predict a positive, moderate correlation between boredom and apathy.

Depletion. Some activities demand that energy and resources be “consumed with regulating attention, persevering at difficult tasks, and managing emotions” (Lanaj, Johnson, & Wang, 2016, p. 1098), known as depletion. Although some tasks may be both depleting and evoking of boredom, depletion is generally reserved for *difficult* tasks and boredom is not limited in the same way and can be experienced with simple tasks or difficult tasks, or even the absence of a task. Thus, I predict a positive, moderate relationship between boredom and depletion.

Emotional Exhaustion. Some work tasks may evoke feelings of “being emotionally overextended and worn out with work,” known as emotional exhaustion (Cole, Walter, Bedeian, & O’Boyle, 2012, p. 1552). Although boredom is also a negative experience that can be accompanied by feelings of being worn out, emotional exhaustion is considered to be a consequence of overload. In contrast, boredom can also be sparked by a lack of workload. Further, unlike emotional exhaustion, boredom can be accompanied by feelings of motivation and the desire to pursue alternative tasks. In short, boredom and emotional exhaustion vary in

their antecedents as well as consequences. I predict a positive, moderate relationship between boredom and emotional exhaustion.

**Meaningfulness.** Tasks can be evaluated in terms of how meaningful they are, “the value of a work goal of purpose, judged in relation to an individual’s own ideas of standards” (Spreitzer, 1995, p. 1443). Although boredom has been theorized to act as a signal when a task is not meaningful or fulfilling (Barbalet, 1999; Elpidorou, 2018), boredom can also be a reaction to tasks that are meaningful but unchallenging, monotonous, etc. Said differently, boredom is not limited to being caused by a lack of meaningfulness. Therefore, I predict a negative, moderate relationship between boredom and meaningfulness.

**Positive Affect.** Positive affect is “the extent to which a person feels enthusiastic, active, and alert” (Watson, Clark, & Tellegen, 1988, p. 1063) and generally a pleasant feeling commonly accompanied by high arousal. Boredom, in contrast, is characterized as unpleasant state that can vary in accompanying arousal from low to high (Danckert, Mugon, et al., 2018; Fisher, 2018; Rafaelli, et al., 2018; van Hooft & van Hooff, 2018). Moreover, whereas positive affect is a general feeling, boredom is a form of cognitive appraisal. Thus, boredom is distinct from positive affect with which I predict to have a negative, moderate relationship.

**Task Significance.** Tasks can vary in “the degree to which a job influences the lives of work of others” (Morgeson & Humphrey, 2006, p. 1323). The task significance of an activity can be related to boredom, where tasks with low task significance may seem pointless and boring. However, the cause of boredom is not limited to the significance of a task, but can also include how challenging the task is or how meaningful, etc. Thus, I predict a negative, moderate relationship between boredom and task significance.

### ***Methods & Procedure of Study 1c***

Adult, full-time workers were recruited from CloudResearch to take a survey on Qualtrics in exchange for \$6 (*for meta-analytic support finding no difference between conventional data and online panel data see Walter, et al., 2019*). Participants from Study 1a were excluded from the subject pool. The average age was 38.94 (SD=10.16) and 51% were male. The demographic breakdown was as follows: Asian 7.7%, Biracial 2.0%, Black or African American 7.7%, Hispanic/Latino 4.4%, Native American 0.7%, White or Caucasian 76.8%, and Other 0.7%. The average number of hours worked per week was 40.25 (SD=7.73) with an average tenure of 72.73 (SD=73.15) months with the organization. Participants held diverse jobs including paralegals, realtors, service workers, military personnel, and engineers.

There were two parts to this survey, following the same procedure as Study 1a. In Part I, participants were asked, “In the past week in your job, which of the following types of tasks did you do (check all that apply): (a) uneventful and dull, (b) typical and routine, and/or (c) unusual and interesting. Participants were then randomly assigned to write about one of the types of tasks they selected. The breakdown of participants in each writing conditions was as follows: uneventful and dull (13.1%), typical and routine (73.4%), and unusual and interesting (13.5%). The uneven distribution between conditions reasonably indicates most participants reported having a typical week at work. Participants also reported when the task occurred in the past week, with most participants saying the task occurred either today (21.2%), yesterday (32.0%), or 2 days ago (20.9%). The remaining participants reported the task as occurring between 3 and 7 days ago (25.9%). In Part II of the survey, participants were asked to think about the task they just wrote about and describe how they felt while working on that task. This portion of the survey presented items from the following measures: absorption (Schaufeli, et al., 2006; 5-item),



apathy (Frijda, 1987; 3-item), boredom (revised from S1b), depletion (Lanaj, et al., 2019; 5-item), emotional exhaustion (Maslach, et al., 1996; 3-item), meaningfulness (Sprietzer, 1995; 3-item), PANAS (Thompson, 2007; 10-item) and task significance (Morgeson & Humphrey, 2006; 4-item), see Appendix C for measurement scales. At the end of the survey participants were asked which topic they were asked to write about as a manipulation check.

### ***Transparency & Openness***

I described the sampling plan and all measures in the study. Data and analysis code are not currently available on any data repository. Data were analyzed using Mplus v8.1 and SPSSv27. This study's design and its analysis were not preregistered. This data collection was approved by the institutional review board.

### ***Results & Discussion of Study 1c***

The number of participants who took the survey was 304. Data was checked for careless responding following best practices (DeSimone & Harms, 2018; DeSimone, Harms, & DeSimone, 2015; Meade & Craig, 2012) using the following indicators: use data question (1:7 scale), attention checks, manipulation checks, and response times on individual pages and total survey duration. In addition, responses to the writing prompts were read for clarity and comprehension. Participants who failed at least two data screening indicators were removed from the sample, leaving a final sample size of 297. Missing data within an existing scale was imputed using within-person mean substitution and affected less than 0.0016% of the data (Roth, Switzer, & Switzer, 1999).

I conducted Confirmatory Factor Analysis (CFA) in Mplusv8.1 and followed best practices to assess convergent and discriminant validity against the proposed boredom measure (Jackson, Gillaspay, & Purc-Stephenson, 2009; Williams & O'Boyle, 2011; Williams, O'Boyle,

& Yu, 2020), see Table 6 for CFA analysis and Appendix B for the proposed boredom measure. Model 1 was comprised of the 15 proposed boredom items loading onto a single factor: a single global boredom item, 4-items each for inattention and low arousal facets, and 3-items each for time drag and high arousal ( $\chi^2=1856.34^*$ ,  $df=91$ ,  $CFI= .67$ ,  $RMSEA= .26$ ). The model fit was poor and after inspection the lowest loading items for the inattention and low arousal facets were dropped resulting in a revised Model 2 ( $\chi^2=1355.33^*$ ,  $df=65$ ,  $CFI= .72$ ,  $RMSEA= .26$ ). The model fit slightly improved.

To account for the multiple proposed subdimensions of boredom (low arousal, high arousal, inattention, and time drag), in Model 3 items of the same subdimension were loaded onto their own factor. There were four factors in Model 3 representing the four boredom subdimensions: low arousal, high arousal, in attention, and time drag, see Appendix B for items and their corresponding subdimension. Since the single global boredom item (“I feel bored”) could not be loaded onto its own factor without the model being under identified, it was set to 1. This 4-factor model of boredom showed improvement over previous single factor models of boredom ( $\chi^2=715.15^*$ ,  $df=61$ ,  $CFI= .86$ ,  $RMSEA= .19$ ).

The proposed boredom measure in Model 3 had 13 items reflecting a single global item of boredom and the four subdimensions that make up the experience of boredom. This is a rather long measurement scale. Therefore, with the goal of creating a shortened, parsimonious scale that would be conducive for survey research where survey length matters, I opted to develop a shortened version. This shortened measure would have to be equally good at capturing boredom at the longer 13-item measure. Therefore, it needed to have items representing both global boredom (“I feel bored”) and each of the four subdimensions of boredom (low arousal, high arousal, in attention, and time drag). I tested a model with only the highest loading item of each

subdimension plus the global boredom measure loading onto a single factor, a five-item boredom measure, in Model 4 ( $\chi^2=15.7^*$ ,  $df=5$ ,  $CFI= .72$ ,  $RMSEA= .09$ ). Compared to the 13-item single factor boredom measure in Model 2, this model had a smaller chi-square, the same CFI, and a smaller RMSEA so I determined it had adequate model fit. In addition to examining the model fit statistics, I looked at the items themselves and determined if they were representative of their respective subdimension of boredom (high arousal, low arousal, inattention, and time drag), and boredom overall. This judgement process of ensuring the full domain of the construct is reflected in the items of the scale is consistent with the rationale of Clark and Watson (2019) that measurement scales should be reflective of both the global experience of a construct *and* its unique subdimensions. Further, this concern over content validity is in line with best practices for shortening scales (Heggstad, et al., 2019).

In remaining CFA models, I tested the convergent and discriminant validity of both the 13-item and the 5-item boredom measures against other measures in boredom's nomological network, *see Models 5 and 6 with apathy, depletion, emotional exhaustion, and boredom, Models 8 and 9 with absorption, meaningfulness, task significance, and boredom, and Models 10 and 11 with positive affect, negative affect, and boredom*. In Models 5-11, models with the 5-item measure of boredom had stronger model fit than the models using the 13-item boredom measure. Finally, fit of the hypothesized model, which included meaningfulness needed and supplied, boredom, and six dependent variables, was good considering its complexity (9 factors, 41 items using the 13-item boredom measure and 34 items using the 5-item boredom measure) (13-item:  $\chi^2=3957.16^*$ ,  $df=953$ ,  $CFI= .80$ ,  $RMSEA= .10$ ; 5-item:  $\chi^2=2133.27^*$ ,  $df=629$ ,  $CFI= .87$ ,  $RMSEA= .09$ ).

A correlation table between boredom and related constructs is presented in Table 7. Overall, the relationships were in the hypothesized direction and strength with a few exceptions. I predicted positive, moderate relationships between boredom and apathy, depletion, and emotional exhaustion. However, these relationships were stronger than hypothesized ( $r = .71-.78$ ). Perhaps even if these experiences are rooted in different antecedents, their expression is tightly related. In addition, I predicted a negative, moderate relationship between task significance and boredom and this relationship, though in the predicted direction, was weaker than anticipated ( $r = -.25$ ).

Notably, the 5-item and 13-item measures of boredom showed nearly identical relationships with constructs in boredom's nomological network, *see Table 7*, suggesting the parsimonious, shorter measure may be equally as good at capturing state boredom. To avoid capitalizing on chance variation in the data when shortening the 13-item scale to 5-items, the 13-item scale was captured in Study 2 and the 5-item scale was reassessed.

## CHAPTER VI

### STUDY 2

#### **Study 2: The Effect of Meaningfulness Misfit on Workplace Boredom**

Boredom “is not a passive surrender to those conditions that provoke it.” (Barbalet, 1999, p. 634). Rather, under certain circumstances, some people likely seek to engage with their environments once boredom is realized. Elpidorou (2018) writes, “...state boredom is not simply disengaged from the environment but also strives to find meaning in the environment or to somehow engage with it” (p. 467). Similarly, Johnsen speculates that boredom can be a signal of meaninglessness, “but also as a creative, if often destructive, protest against this loss” (2016, p. 1404). Although boredom has previously been limited to examination with negative outcomes, I propose that this longing to engage can also be directed in other beneficial or innovative ways. Thus, I propose a model where meaningfulness fit predicts a series of both positive and negative work attitudes and behaviors and that these relationships are mediated by state boredom. In addition, I introduce two second stage moderators that explain when boredom will lead to positive versus negative attitudes and behaviors: proactive personality and perceived organizational support. The full hypothesized model is presented in Figure 1.

*Rationale for selecting dependent variables.* The joint influence of meaningfulness needs and supplies on boredom will, successively, influence employee attitudes and behaviors. The process for selecting appropriate dependent variables began with two objectives. First, the

variables had to vary alongside boredom (i.e., daily). Attitudes and behaviors likely to change throughout the workday were preferred over more stable ones, such as organizational commitment or job satisfaction. Second, one of the primary focuses of this paper is to explore potential “bright sides” of boredom. Therefore, I was particularly interested in identifying positive attitudes or behaviors likely to stem from boredom.

Although the boredom literature has largely omitted potential benefits from boredom, recent conceptual and review articles have suggested the possibility that boredom can trigger people to engage with their environments in a positive way (Danckert, Mugon, et al., 2018; Elsbach & Hargadon, 2006; Johnsen, 2016), and some empirical work supports this conjecture. In a series of lab experiments, Park, Lim, and Oh (2019) found that boredom led to creative performance, but only in people with high learning goal orientations, needs for cognition, openness to new experiences, and internal locus of control. Lin, Law, and Zhou (2017), although not directly examining boredom, found that downtime—a potential contextual precursor to state boredom—was positively related to creativity via problem solving. Additionally, in a qualitative study investigating what employees do when bored, Velasco (2017) found that a quarter of participants reported engaging in proactive behaviors, including developing new ideas. Building from this body of research, I wanted to capture whether boredom led to employees developing, promoting, and realizing novel ideas to improve their job or the organization, known as innovation (Jannssen, 2001). Innovation is a behavior that encompasses not only creative idea generation, but also the endorsement and implementation of those ideas.

In addition to innovation, bored employees may seek to engage with their environments in other beneficial ways. Some research from the motivation literature has suggested that, given the opportunity, employees will proactively engage in additional skill-building and job training

(Frayne & Geringer, 2000; Kanfer, Frese, & Johnson, 2017; Schooler, Mulatu, & Oates, 2004). Similarly, research on citizenship behavior has found that some employees proactively offer to help coworkers (Parker, Wang, & Liao, 2019). Therefore, it seems plausible that when bored, given the opportunity, employees may seek to engage with their environments in positive ways via skill building or engaging in coworker-directed citizenship behavior.

The primary focus of this study is to explore the potential positive behaviors that come from boredom at work. However, given that boredom has been largely understudied in management, there are some interesting “dark side” attitudes that have yet to be explored as well. Conceivably, employees who routinely find themselves bored due to a mismatch with their environment are likely develop negative attitudes towards their job or organization such as frustration or even cynicism. Over time, these employees may even consider leaving their organization to find jobs that are more engaging or meaningful. Therefore, I also include frustration, cynicism, and turnover intentions as dependent variables of interest.

### **Hypothesis Development**

*Effects of fit on boredom.* Meaningfulness fit occurs when needed meaningfulness equals supplied meaningfulness, either when needed and supplied are both low, *Low-Low*, or when needed and supplied are both high, *High-High*. The needs literature indicates that employees may strive to fulfill their needs through their work and that such fulfillment is advantageous (McClelland, 1987; Ryan & Deci, 2000; van Vianen, 2018). Congruence between a person’s needs and supplies consistently leads to higher job satisfaction and decreased stress (Cable & Edwards, 2004; Edwards & Cable, 2009; Kristof-Brown & Guay, 2011; van Vianen, 2018). Thus, it can be expected that congruence between how meaningful an employee desires their work to be and how meaningful their work actually is will be beneficial to employees.

Boredom is unlikely to be evoked when meaningfulness needs are fulfilled since boredom is a reaction to a *mismatch* between someone's needs and their environment (Barbalet, 1999; Danckert & Eastwood, 2020). However, when needs are high it may indicate that this particular need has great value to a person and therefore it can be particularly rewarding when such needs are met (Locke, 1976). In terms of meaningfulness, when meaningfulness needs are low and met it may not be as rewarding and boredom is therefore more likely to occur in this situation compared to when meaningfulness needs are high and met. Therefore, employee boredom will be lower when meaningfulness needed and supplied are both high compared to when meaningfulness needed and supplied are both low.

*Hypotheses 1:* Compared with when meaningfulness needed and supplied are both low, when meaningfulness needed and received are both high, employees' boredom will be lower.

*Effects of deficiency and excess on boredom.* Meaningfulness misfit occurs either when meaningfulness supplied is short of needs, *deficiency*, or when meaningfulness supplied exceeds needs, *excess*. The needs literature suggests when employees' needs are not matched, that is, supplies are either deficient or in excess of needs, employees experience fewer positive outcomes and greater strain than employees' whose needs are matched (Edwards & Cable, 2009; Edwards & Van Harrison, 1993; Follmer, Talbot, Kristof-Brown, Astrove, & Billsberry, 2018; van Vianen, 2018). Thus, it can be expected that incongruence between how meaningful an employee desires their work to be how meaningful they actually perceive their work to be is disadvantageous to employees.

The literature on boredom clearly specifies a *lack* of meaningfulness as a cause for boredom (Barbalet, 1999; Chan et al., 2018; Elpidorou, 2018; Fisher, 2018; Tam, et al., 2021;



van Tilburg & Igou, 2012). That is, when task meaningfulness is deficient of employee needs, employees will experience boredom. However, as meaningfulness supplied increases and needs are met, boredom will decrease. For example, imagine an employee who has strong meaningfulness needs, but is working on a task they deem lacks meaning. As a result of meaningfulness supplies deficient of their needs, this employee will feel bored. However, if this employee either switches to a more meaningful task or changes how they cognitively frame the task so it becomes more meaningful, the meaningfulness supplied by the task will begin to meet their needs and the employee will feel less bored.

The boredom literature is less clear on the effect of *too much* meaningfulness. Boredom is known to have a bimodal relationship with resources such as cognitive demands (Pekrun, 2006; Pekrun, et al., 2010) and the presentation of information (Klapp, 1986). In each of these situations, boredom occurred when there was both too little and too much of something. This is consistent with the stress literature where characteristics of the job that are beneficial can become harmful at extreme levels (Warr, 1987). Similarly, Edwards (1996) proposed that excess needs can at times hinder need fulfillment. Meaningfulness may operate in a similar way. Indeed, there is empirical evidence that when meaningfulness supplies are in extreme levels of excess of needs, people begin to experience fatigue and decreased engagement (Vogel, et al., 2020).

For example, the opportunities for an EMT or teacher to assist others might become so great and important that it becomes overwhelming. What was once rewarding may turn into a burden requiring increased emotional labor or cognitive resources (Hobfoll, 1989; 2001). In turn, employees experiencing excess may begin to feel drained, disengaged, or even bored. This idea of being inundated with meaningful opportunities to the point that they are no longer impactful is consistent with ideas of information overload and noise. Klapp (1986) wrote, “As noise

increases, it obstructs or interferes with meaning, [and] therefore produces boredom” (p. 85). Supporting this logic, empirical evidence that found crisis situations can change perceptions of meaning in work, making job tasks more or less meaningful (Sahay & Dwyer, 2021). When perceived meaningfulness varies, it is conceivable that the reaction to such tasks also varies. Thus, it is reasonable to suggest that when people are in meaningfulness excess, they may experience boredom, although probably not as strongly as people in meaningfulness deficiency.

In short, meaningfulness is generally seen as a desirable aspect of a work task (Spreitzer, 1995; Vogel, et al., 2020). So, when meaningfulness is even slightly deficient of needed amounts, it likely evokes boredom. Consistent with the stress literature (Warr, 1987), because meaningfulness is generally desirable, slightly higher meaningfulness than needed may be interpreted as a bonus, however, at extreme levels of excess, it may become a burden triggering boredom. Although misfit in general is likely to induce strain, when meaningfulness supplies are deficient of needs boredom will be higher than when supplies are in excess of needs. Combining predictions for meaningfulness deficiency and excess together describes an asymmetrical U-shape surface for misfit.

*Hypotheses 2:* Boredom will be high when meaningfulness supplies are deficient of prosocial needs but will drop as supplies increase to meet needs. As meaningfulness supplies exceed needs boredom will begin to increase.

*Boredom as a mediator.* If boredom does act as a signal that there is a mismatch between a person and their environment as is proposed in the boredom literature (Barbalet, 1999; Elpidorou, 2018; Tam et al., 2021), then boredom should explain the relationship between meaningfulness needed and supplied and employee attitudes and behaviors. When meaningfulness supplied is deficient or in excess of needed amounts, employees experience

boredom. Boredom, in turn, influences employees' behaviors and attitudes. This reasoning is consistent with theoretical models of affective reactions to various work situations (Weiss & Cropanzano, 1996).

It has been suggested that when employees experience boredom they may take the opportunity to engage in proactive behaviors (Danckert, Mugon, et al., 2018; Elsbach & Hargadon, 2006; Johnsen, 2016; van Tilburg & Igou, 2017). Such employees may seek to develop, promote, and realize new ideas to improve their job or the organization (i.e., innovation), take the opportunity to improve on work skills (i.e., skill building), or help coworkers (i.e., OCB).

In addition to identifying possible positive behaviors triggered by optimal boredom, it is important to understand negative job attitudes caused by high levels of boredom. Boredom is a negative cognitive state that likely elicits negative attitudes, particularly as boredom reaches high levels. As boredom increases, it is likely employees experience frustration and attribute this feeling towards their organization, thus experiencing organizational cynicism. At extreme levels of boredom, employees may even consider leaving the organization (i.e., turnover intentions [TOI]). Importantly, TOI is also influenced by other factors such as overall satisfaction, leader-subordinate relationships, etc. Therefore, although the relationship between boredom and TOI is predicted to be positive and linear, it will be weaker compared to the relationships between boredom and cynicism or frustration. Given that we live in a complex, multi-determined world, boredom is predicted to partially mediate the effect from meaningfulness desired and supplied onto the dependent variables.

*Hypothesis 3a-g:* Boredom will partially mediate the effect of meaningfulness needed and supplied to (a) innovation, (b) OCBI-I, (c) skill building, (d) cynicism, (e) frustration, and (f) turnover intentions.

*Proactive Personality as a Second Stage Moderator.* It is reasonable to expect that some people may be more likely to pursue positive behaviors as a response to boredom than others. The personality literature suggests work contexts can cue or activate people with proactive tendencies to act (Parker, et al., 2019; Wu, Parker, Wu, & Lee, 2018). Workplace boredom may serve as such a cue for people with more proactive personalities. If boredom serves as a signal that there is a mismatch between what the person needs and what they are receiving from the environment, then people with stronger proactive personality traits may engage in positive behaviors in an attempt to reduce boredom and engage with their environments. Therefore, I propose proactive personality acts as a second stage moderator (Edwards & Lambert, 2007) between boredom and work outcomes so that people with stronger proactive personality traits are more likely to engage in positive behaviors and less likely to experience negative attitudes than people with weaker proactive personality traits.

*Hypotheses 4a-g:* Proactive personality will moderate the relationship between boredom and work outcomes so that when proactive personality is high, the relationship between boredom and positive behavioral outcomes— (a) innovation, (b) OCBI-I, (c) skill building—will be stronger than when proactive personality is low. Similarly, when proactive personality is high, the relationship between boredom and negative attitudinal outcomes— (d) cynicism, (e) frustration, and (f) turnover intentions—will be weaker than when proactive personality is low.

*Perceived Organizational Support as a Second Stage Moderator.* In addition to proactive personality, an additional moderator explaining when boredom leads to positive versus negative outcomes may be perceived organizational support (POS). POS is the perception of how well the organization supports an employee's values and their contributions to the organization (Rhoades & Eisenberger, 2002). Perhaps when employees feel supported (i.e., high POS) they are more inclined to pursue organizational goals and engage in positive behaviors to alleviate boredom. In contrast, employees who feel less supported (i.e., low POS) may be less inclined to pursue positive behaviors aligning with organizational goals, instead feeling cynical, frustrated, and perhaps consider leaving the organization. Therefore, I propose POS acts as a second stage moderator (Edwards & Lambert, 2007) between boredom and work outcomes so that people who experience higher POS are more likely to engage in positive behaviors and less likely to experience negative attitudes than people who experience lower POS. Although not a formal hypothesis, a prediction for the triple interaction between boredom, proactive personality, and POS on the dependent variables, along with results, is available in Appendix D.

*Hypothesis 5a-g:* POS will moderate the relationship between boredom and work outcomes so that when POS is high, the relationship between boredom and positive behavioral outcomes— (a) innovation, (b) OCBI-I, (c) skill building—will be stronger than when POS is low. Conversely, when POS is high, the relationship between boredom and negative attitudinal outcomes— (d) cynicism, (e) frustration, and (f) turnover intentions—will be weaker than when POS is low.

### **Alternative Mediators**

Although I suggest boredom acts as the mediating mechanism between meaningfulness and outcomes, it is plausible that other mediating mechanisms can explain the proposed

relationships. Therefore, in following best practices for developing competing models (MacCallum & Austin, 2000; Vandenberg & Grelle, 2009), I propose two alternative mediating mechanisms: positive affect and absorption.

*Alternative Model A: Positive Affect.* The hypothesized model predicts boredom mediates the relationship between meaningfulness and work outcomes; however, it is possible that rather than a cognitive state (i.e., boredom) serving in the mediating role, positive affect is also an explanatory variable. Positive affect is a generally pleasant feeling encompassing contentment, happiness, and joy (Watson, Clark, & Tellegen, 1988, p. 1063). There is experimental evidence for positive affect stemming from increased meaningfulness in work (Schutte, Searle, Meade, & Dark, 2012). Further, it is well documented in the literature that affect dictates employee outcomes. This is consistent with theoretical models of affective reactions predicting work attitudes and behavior (Kanfer, et al., 2017; Weiss & Cropanzano, 1996).

Meta-analytic evidence points to positive relationships between positive affect and extra-role behaviors such as helping (Dalal, 2005; Lyubomirsky, King, & Diener, 2005). Although the evidence is mixed on whether positive or negative affect is better for problem solving, creativity, and task performance (Lyubomirsky, et al., 2005), positive affect has been linked to those behaviors and so it is likely to be linked to similar positive behaviors such as innovation and skill building. In addition, there is empirical evidence of positive affect having a negative relationship with cynicism (Roberts & Zigarmi, 2014) and turnover over intentions (Sandrin, Morin, Fernet, & Gillet, 2020). Given the negative correlation between positive affect and negative affect (Thompson, 2007), it is likely that positive affect is also negatively related to feelings of frustration. Thus, it is reasonable to expect that affect will mediate the relationship between meaningfulness fit and employee attitudes and behavior. Positive affect is predicted to

partially mediate the effect from meaningfulness desired and supplied onto the dependent variables.

*Hypothesis 6a-g:* Positive affect will partially mediate the effect of meaningfulness needed and supplied to (a) innovation, (b) OCBI-I, (c) skill building, (d) cynicism, (e) frustration, and (f) turnover intentions.

*Alternative Model B: Absorption.* In addition to boredom in the hypothesized model and affect in alternative model A, it is also possible that meaningfulness predicts *absorption* which in turn predicts work attitudes and behaviors. Absorption is the experience of being fully and pleasantly occupied by the present task (Schaufeli, et al., 2006). Indeed, consistent with theory (Kahn, 1990), empirical research has found meaningfulness to have a positive impact on how absorbed an employee is with their work (Rodell, 2013).

Although there is not much research that directly examines the role of absorption in relation to work outcomes, there is an abundance of empirical support for the notion that engagement, a higher order construct of absorption (Cole, et al., 2012), is related to employee outcomes. Meta-analytic evidence and systematic reviews point towards positive relationships between engagement and innovation (Kwon & Kim, 2020) as well as citizenship behaviors such as helping (Christian, Garza, & Slaughter, 2011). Given the positive relationship between engagement and performance (Christian, et al., 2011), it is likely there is a positive link between absorption and skill building as well. Further, meta-analyses and systematic reviews of engagement have noted the importance of absorption in decreasing employee cynicism (Cole, et al., 2012) and turnover over intentions (Borst, Krueger, Lako, & de Vries, 2020). In a similar vein to organizational cynicism, it can be expected that absorption is negatively correlated with frustration as well. Thus, it is reasonable to expect that meaningfulness will predict absorption,

which in turn predicts employee attitudes and behavior. Absorption is predicted to partially mediate the effect from meaningfulness desired and supplied onto the dependent variables.

*Hypothesis 7a-g:* Absorption will partially mediate the effect of meaningfulness needed and supplied to (a) innovation, (b) OCBI-I, (c) skill building, (d) cynicism, (e) frustration, and (f) turnover intentions.

Combined, Hypotheses 1-7 depict a second stage moderated mediated model (Edwards & Lambert, 2007) with boredom, positive affect, and absorption partially mediating the effect between meaningfulness fit and work outcomes and proactive personality and POS moderating the relationships between boredom and work outcomes. As such, although the developed hypotheses focus on specific points in the model, the full model will be tested to assess the overarching framework of relationships between variables.

### ***Methods & Procedure of Study 2***

Adult, full-time US workers were recruited from Prolific to take part in two surveys 3-5 days apart on Qualtrics in exchange for \$5 (*for meta-analytic support finding no difference between conventional data and online panel data see Walter, et al., 2019*). This was a time-separated design. The average age was 37.0 (SD=10.6) and 49.8% were male. The demographic breakdown was as follows: Asian 8.9%, Biracial 2.5%, Black or African American 5.1%, Hispanic/Latino 4.2%, Middle Eastern 0.2%, Native American 0.8%, White or Caucasian 77.9%, and Other 0.5%. The average number of hours worked per week was 41.5 (SD= 9.9) with an average tenure of 69.4 (SD= 158.5) months with the organization. Participants held diverse jobs including teachers, law enforcement, healthcare workers, and hospitality workers.

There were two surveys in this time-separated study design. In survey 1, participants were first asked to think about their job and answer questions about work attitudes. In the second



part of the survey, participants were asked to think about how likely they were to perform certain behaviors in the future. This type of design is rooted in theories of planned behavior (Ajzen, 1991; Ajzen & Fishbein, 1977) and has been previously used in management research (Ilies, Peng, Savani, & Dimotakis, 2013). Survey 1 presented items from the following measures on a 1:7 scale for agreement (1=strongly disagree, 4= neither agree nor disagree, 7=strongly agree), except for meaningfulness needs and supplies which was on a 1:7 scale for amount (1=none at all, 4=a moderate amount, 7=a great deal), (Casper, Edwards, Wallace, Landis, & Fife, 2020): absorption (Schaufeli et al., 2006), citizenship behavior (Lambert, Bingham, & Zabinski, 2019), cynicism (Johnson & O’Leary, 2003), frustration (Gelbrich, 2010), innovation (Janssen, 2001), meaningfulness needs and supplies (Vogel et al., 2020), positive affect (Thompson, 2007), POS (Eisenberger, et al., 2001), proactive personality (Bateman & Crant, 1993,  $\alpha=.88$ ), skill building (Lambert, et al., 2019), and turnover intentions (Kelloway, Gottlieb, & Barham, 1999). Boredom was assessed using the 13-item measure developed in Study 1c. All potential control measures were single-item: tenure with organization (in months), age (in years), and highest level of education (categorical variable) with the exception of trait boredom (Struk, et al., 2017), see Appendix C for complete measurement scales

In survey 2, participants were asked how much they engaged in the following behaviors since survey 1: citizenship behavior (Lambert, et al., 2019), innovation (Janssen, 2001), and skill building (Lambert, et al., 2019). Notably, it is unnecessary to time separate meaningfulness needs and supplies solely due to common method variance (CMV) concerns since CMV cannot artificially inflate significance in the product terms in polynomial models (Siemsen, Roth, & Oliveira, 2010). Therefore, the independent variables were only collected once in survey 1. The

average time spent on both surveys was 15.15 minutes (SD= 17.35) and participants were paid \$5 upon completion of both surveys.

*Possible Control Variables.* I follow the best practice recommendations on the use of control variables (Becker, 2005; Carlson & Wu, 2012; Spector, 2021). Boredom has been linked to age (Hill, 1975; Westgate, 2020) and education level (Lee & Zelman, 2019). It is also reasonable to expect that time spent on the job (e.g., months with the organization) might explain state boredom. In addition, although this research focuses on state boredom, it is possible that trait boredom (Struk, et al., 2017) influences the dependent variables as well. Therefore, I collected information on these variables.

### ***Transparency & Openness***

I described the sampling plan and all measures in the study. Data and analysis code are not currently available on any data repository. Data were analyzed using Mplus v8.1 and SPSSv27. This study's design and its analysis were not preregistered. This data collection was approved by the institutional review board.

### ***Results & Discussion of Study 2***

Power sensitivity analysis was conducted a priori using GPower v3.1 and the target sample size was determined to be approximately 600-650. The number of participants who took survey 1 was 649. Data was checked for careless responding following best practices (DeSimone & Harms, 2018; DeSimone, Harms, & DeSimone, 2015; Meade & Craig, 2012) using the following indicators: use data question (1:7 scale), attention checks, and response times on individual pages and total survey duration. In addition, responses to the writing prompts were read for clarity and comprehension. Participants who failed at least two data screening indicators were removed from the sample, leaving a final sample size of 644 that was invited to participate

in survey 2. Survey 2 had a response rate of 93%. After checking for careless responding following the same procedures in survey 1, the final sample size which completed both surveys was 595. Correlations, means, standard deviations, and scale measure Cronbach's alphas are presented in Table 8.

**CFA.** I conducted Confirmatory Factor Analysis (CFA) in Mplusv8.1 and followed best practices to assess convergent and discriminant validity against the proposed boredom measure (Jackson, et al., 2009; Williams & O'Boyle, 2011; Williams, et al., 2020), see Table 9. Full Maximum Likelihood was used in Mplusv8.1 to account for any missing data. Model 1 included all hypothesized model variables (meaningfulness needed and supplied, boredom (13-item), proactive personality, perceived organizational support, frustration, cynicism, turnover intentions, organizational citizenship behavior, skill building, and innovative behavior). The fit of Model 1 was better than anticipated considering it was comprised of 11 factors and 55 items ( $\chi^2=6785.74^*$ ,  $df=1375$ ,  $CFI=.88$ ,  $RMSEA=.08$ ). In Model 2, Model 1 was modified so that meaningfulness needed and supplied were collapsed into a single factor, and it exhibited worse fit compared to the original model ( $\chi^2=7564.50^*$ ,  $df=1385$ ,  $CFI=.86$ ,  $RMSEA=.08$ ). In Model 3, consistent with recommendations for theoretically related measures and with prior practice in studies of PE Fit (Cole, et al., 2007; Tepper, et al., 2018), Model 1 was modified to allow corresponding meaningfulness needed and supplied items to correlate (e.g., the residual of item 1 for needs was allowed to correlate with item 1 for supplies). Model 3 showed comparable model fit compared to Model 1 ( $\chi^2=6651.81^*$ ,  $df=1372$ ,  $CFI=.88$ ,  $RMSEA=.08$ ). In Model 4, Model 3 was modified using the 5-item boredom measure and this model exhibited adequate model fit ( $\chi^2=2737.25^*$ ,  $df=976$ ,  $CFI=.95$ ,  $RMSEA=.05$ ).

In Model 5, Model 4 was modified so that frustration and cynicism were collapsed onto a single factor since they were highly correlated ( $r=.70$ ). Model 5 exhibited worse model fit compared to Model 4 ( $\chi^2=3601.76^*$ ,  $df=986$ ,  $CFI=.93$ ,  $RMSEA=.06$ ). Finally, in Model 6, Model 4 was modified so that the behavioral dependent variables (citizenship behavior, innovative behavior, skill building) were collapsed into a single factor since they were all highly correlated ( $r=.68-.78$ ). This model exhibited worse fit compared to Model 4 ( $\chi^2=6785.74^*$ ,  $df=1375$ ,  $CFI=.88$ ,  $RMSEA=.08$ ). Through this process, it was determined Model 4 exhibited adequate fit, and it was reasonable to proceed with tests of the hypotheses. Standardized loadings for factors in Model 4 are presented in Table 10.

**Polynomial Regression and Response Surface Analysis.** Hypotheses 1 and 2 predicted the joint effect of meaningfulness needs and supplies on boredom in an asymmetrical U-shape surface. These hypotheses were tested using polynomial regression and response surface analysis in IBM SPSS Statistics v28 (Edwards, 1996). The quadratic equation for polynomial regression is as follows:

$$(1) Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e$$

where X and Y refer to meaningfulness supplies and needs, respectively, and Z refers to boredom. The slopes and curvatures of the fit ( $X = Y$ ) and misfit ( $X = -Y$ ) lines along the response surface were calculated using the coefficients from the polynomial regression (Edwards, 2002). A scatter plot of the relationship between meaningfulness needs and supplies revealed most people were either in situations of fit or deficiency, with a few people in situations of excess, see Figure 2. The results for the polynomial regression and response surface analysis are presented in Tables 11-12 as well as visually presented in Figure 3<sup>3</sup>. A significant amount of variance was explained in boredom by the meaningfulness fit model ( $r^2=.28$ ,  $p<.001$ )

Hypothesis 1 predicted that employees' boredom will be lower when meaningfulness needed and received are both high, compared to both low, and this would be supported by a negative slope ( $b_1+b_2$ ) and nonsignificant curvature ( $b_3+b_4+b_5$ ) along the fit line. The slope was negative and significant ( $b = -.30, p < .001$ ) indicating that boredom decreased along the fit line from low-low to high-high. The curvature was negative and significant ( $b = -.06, p < .05$ ) indicating that the line of fit was not linear but curved slightly downward in situations of high-high fit. This curvature was not predicted in H1. In short, as predicted, boredom was lower for people enjoying high-high meaningfulness fit compared to low-low, however this trajectory was not linear like hypothesized. Thus, I conclude partial support for H1.

Hypothesis 2 predicted that boredom will be high when meaningfulness supplies are deficient of prosocial needs and boredom will drop as supplies increase to meet needs. As meaningfulness supplies begin to exceed needs, boredom will again begin to increase, and this would be supported by negative slope ( $b_1 - b_2$ ) and significant positive curvature ( $b_3 - b_4 + b_5$ ). The slope was negative and significant ( $b = -.58, p < .01$ ) indicating that boredom sharply dropped when meaningfulness supplied began to meet meaningfulness needs. The curvature was positive and nonsignificant, indicating boredom did not begin to increase as meaningfulness supplies exceeded meaningfulness needs ( $b = .18, p = .06$ ). Thus, I conclude partial support for H2.

**Hypothesized Model.** Hypotheses 3-5 predicted that boredom would partially mediate the effect between meaningfulness fit and work outcomes and that POS and proactive personality would moderate the second stage of this mediated model. Thus, the full model includes the joint effect of meaningfulness needed and supplied at the front end, boredom as a mediator, and work attitudes and behaviors as outcomes (i.e., OCB, skill building, innovative behavior, cynicism,

frustration, and turnover intentions). The second stage of this mediated model is moderated by POS and proactive personality, see Figure 1.

To capture the effect of both meaningfulness needed and supplied on the mediator and dependent variables, block variables were used (Cable & Edwards, 2002; Heise, 1972; Marsden, 1982). This method accounts for the total variance explained by the polynomial via the corresponding block. Block variables are created by regressing the dependent variable on the five polynomial terms; it does not look account for variance explained by a specific point on the response surface. The regression coefficient estimates are then used to estimate the block variable. For the path from the meaningfulness polynomial to boredom, the following equation was estimated from Equation (1) into Equation (2) as follows:

$$(2) \text{BLK}_{\text{Boredom}} = b_1 * X + b_2 * Y + b_3 * X^2 + b_4 * XY + b_5 * Y^2 + e$$

$\text{BLK}_{\text{Boredom}}$  refers to the combined effect of meaningfulness fit on the mediator. This process was repeated to obtain the direct effect from meaningfulness fit to each of the dependent variables, see Equation 3.

$$(3) \text{BLK}_{\text{DV}} = b_1 * X + b_2 * Y + b_3 * X^2 + b_4 * XY + b_5 * Y^2 + e$$

$\text{BLK}_{\text{DV}}$  refers to the combined effect of meaningfulness onto one of the dependent variables, such as innovative behavior. A new block variable was created for each dependent variable. The full hypothesized model was tested with a single dependent variable at a time using the following two equations:

$$(4) \text{Boredom} = b_1 \text{BLK}_{\text{Boredom}} + e$$

$$(5) \text{Dependent Variable} = b_1 \text{BLK}_{\text{DV}} + b_2 \text{Boredom} + b_3 \text{POS} + b_4 \text{ProactivePersonality} + b_5 \text{POS} * \text{Boredom} + b_6 \text{ProactivePersonality} * \text{Boredom} + e$$

Equations 4 and 5 combined represent a second stage moderated mediated model using a block variable approach from the meaningfulness polynomial to the mediator (a path) and the dependent variable (direct effect or c' path).

The hypothesized model was tested using Mplus8.1 and Full Maximum Likelihood to account for any missing data. Bias corrected 99% confidence intervals were bootstrapped at 10,000 around the indirect effects to determine significance (MacKinnon, Lockwood, & Williams, 2004). Each moderated mediated model was analyzed with one dependent variable at a time. Standardized beta coefficients were examined.

Hypothesis 3 predicted boredom would mediate the relationship between meaningfulness fit and work outcomes. The effects of meaningfulness and boredom explained a significant amount of variance in all dependent variables (r-square between .33-.63), see Table 13. The indirect effect of meaningfulness fit through boredom was significant for cynicism and frustration only. The relationship was nonsignificant for OCB, skill building, innovative behavior, and turnover intentions. Thus, H3 was partially supported.

Hypothesis 4 predicted proactive personality will moderate the relationship between boredom and work outcomes so that when proactive personality is high, the relationship between boredom and positive behavioral outcomes— (a) innovation, (b) OCBI-I, (c) skill building—will be stronger than when proactive personality is low. Conversely, when proactive personality is high, the relationship between boredom and negative attitudinal outcomes— (d) cynicism, (e) frustration, and (f) turnover intentions—will be weaker than when proactive personality is low. Results indicated proactive personality only moderated the relationship between boredom and turnover intentions so that as boredom increased, turnover intentions increased, and this

relationship was stronger for people with higher proactive personalities (-1SD = .15, +1SD=.38), see Table 13. Thus, Hypothesis 4 was largely unsupported.

Hypothesis 5 predicted POS will moderate the relationship between boredom and work outcomes so that when POS is high, the relationship between boredom and positive behavioral outcomes— (a) innovation, (b) OCBI-I, (c) skill building—will be stronger than when POS is low. Conversely, when POS is high, the relationship between boredom and negative attitudinal outcomes— (d) cynicism, (e) frustration, and (f) turnover intentions—will be weaker than when POS is low. Regression results indicated POS only moderated the effect between boredom and cynicism, frustration, and TOI, see Table 13. POS moderated the relationships between boredom and negative work attitudes so that when boredom increased, negative attitudes increased, and this relationship was weaker for people experiencing lower POS (Cynicism -1SD = .56, +1SD=.39; Frustration -1SD = .90, +1SD=.63; TOI -1SD = .37, +1SD=.16). Thus, Hypothesis 5 was partially supported.

**Examination of Alternative Mediators.** Hypotheses 6 and 7 predicted that positive affect and absorption, respectively, would act as alternative mediators to boredom. To test these hypotheses, although not formally hypothesized, I first examined the polynomial regression and response surface analysis of meaningfulness needed and supplied on positive affect and absorption, respectively, see Tables 11-12. Results indicate that meaningfulness fit explained a significant amount of variance in both positive affect ( $r^2=.32$ ,  $p<.001$ ) and absorption ( $r^2=.34$ ,  $p<.001$ ).

When meaningfulness fit predicted positive affect, the slope of fit line was positive and significant ( $b= .50$ ,  $p<.001$ ) indicating that positive affect increased along the fit line from low-low to high-high. The curvature was positive and significant ( $b= .07$ ,  $p<.05$ ) indicating that the



fit line curved slightly upwards in high-high fit. The slope of the misfit line was positive and nonsignificant ( $b = .04, p > .05$ ) indicating that the level of positive affect did not change when meaningfulness supplied began to meet meaningfulness needs. The curvature was negative and nonsignificant, indicating positive affect did not begin to increase as meaningfulness supplies exceeded meaningfulness needs ( $b = -.15, p > .05$ ). Combined, this depicts an inverse U-shape surface.

When meaningfulness fit predicted absorption, the slope of fit line was positive and significant ( $b = .55, p < .001$ ) indicating that absorption increased along the fit line from low-low to high-high. The curvature was positive and nonsignificant ( $b = .01, p > .05$ ) indicating that the fit line was linear. The slope of the misfit line was positive and nonsignificant ( $b = .28, p > .05$ ) indicating that the level of absorption did not change when meaningfulness supplied began to meet meaningfulness needs. The curvature was negative and significant, indicating absorption decreased as meaningfulness supplies exceeded meaningfulness needs ( $b = -.17, p < .05$ ). Combined, this depicts an inverse U-shape surface.

Comparing the surfaces of meaningfulness fit and boredom to those of meaningfulness fit and positive affect and absorption, all three surfaces seem to be largely driven by meaningfulness supplied as indicated by the higher order terms in the polynomial regression results, see Table 11. Notably, both of the inverse U-shaped surfaces for positive affect and absorption response surfaces are distinct from the relationship between meaningfulness fit and boredom which depicted an asymmetrical U-shape surface, see Table 12.

After examining the response surfaces, to determine the mediating effect of positive affect and absorption the same block variable approach that was used to examine the hypothesized model was used to examine the alternative mediator models. When positive affect

was included as a mediator, the regression results indicated the indirect effect from meaningfulness fit to the dependent variables through positive affect was nonsignificant, meaning positive affect did not mediate the focal relationships, see Table 14. Thus, Hypothesis 6 was unsupported. When absorption was included as a mediator, there was a significant indirect effect from meaningfulness fit through skill building and frustration, see Table 15. Thus, Hypothesis 7 was partially supported.

### **Discussion of Study 2 Results**

In this study, the meaningfulness of work was found to be a significant predictor of boredom. This supports conceptualizations of the role of boredom in signaling meaninglessness (Barbalet, 1999; Elpidorou, 2018) and joins a growing body of empirical work on that relationship (Chan, et al., 2018; Park, et al., 2019; van Tilburg & Igou, 2011; 2012). Further, the proposed joint relationship of meaningfulness needed and supplied was partially supported. Although situations of meaningfulness deficiency resulted in boredom, meaningfulness excess did not. Notably, although nonsignificant, the curvature in excess was positive and approaching significance ( $b=.18$ ,  $p=.06$ ), see Table 12. Possibly indicating that in certain circumstances or contexts, excess meaningfulness can become noise and induce boredom.

Why did excess meaningfulness not induce boredom when boredom has bimodal relationships with other environmental factors? Although the sample in which this was tested was large ( $N=646$ ), the number of people in excess was smaller compared to those in fit or deficiency, see scatter plot in Figure 2. Perhaps there was not quite enough power to detect an effect in the excess portion of the surface. Alternatively, perhaps the experience of meaningfulness excess only occurs in certain industries or occupations. The sample in Study 2 was quite diverse in terms of occupation and duration in the current position. It is conceivable

that the nonsignificant uptick of boredom in situations of excess (i.e., positive curvature in misfit) indicates that only people in certain occupations within the sample were experiencing boredom in excess, but this pattern was being “washed out.” Still, another explanation may be that meaningfulness excess only induces boredom in specific contexts such as prolonged meaningfulness excess or situations where meaningfulness is particularly salient (e.g., EMTs or firefighters responding to a crisis, etc.). This would be consistent with experimental research which found people reported higher levels of boredom in richer environments that had more opportunities for engagement (Struk, Scholer, Danckert, & Seli, 2020).

Emerging research and discussion have suggested a potential link between boredom and positive outcomes (Danckert, Mugon, et al., 2018; Elpidorou, 2017; Elsbach & Hargadon, 2006; Johnsen, 2016), such as innovation, skill building, or citizenship behavior. The rationale being that boredom is a negative cognitive appraisal of a situation and people will want to replace this with something else, possibly something positive. In the present model, I proposed two potential moderators that would explain under what situations the relationship between boredom and these desirable behaviors will become positive. First, that people with strong proactive personalities will be more likely to engage in these positive behaviors. Second, that people in situations of strong POS will be more likely to engage in these positive behaviors. However, the results of this study indicated that proactive personality did not moderate the relationship between boredom and positive behaviors. Perhaps regardless of people’s proactive personalities, work autonomy and the freedom to be able to engage in these behaviors is a barrier to choosing to engage in positive behaviors as a reaction to boredom. Alternatively, maybe people with stronger proactive personalities may recognize and remedy boredom more quickly, and so the relationship is absent in the data. Indeed, recent work in psychology has found that people who are more mindful

experienced less boredom and greater life satisfaction (Waterschoot, Van der Kaap-Deer, Morbee, Soenens, & Vansteenkiste, 2021). I do not think that the present study's findings definitively conclude boredom cannot spark behaviors useful to the organization, but perhaps more consideration needs to be put towards under what contexts this occurs.

Something to consider more broadly in understanding why the nonfindings is the complexity of the model. In a recent *Organizational Research Methods* article, Saylor and Trafimow (2021) caution organizational scholars against the use of complex causal chains and overuse of variables to complicate models. The authors warn that the use of complex models disingenuously appear to be more reflective of reality, when in truth these models have severely lower statistical probability of being true compared to more parsimonious models. Following their analyses, the probability that the present hypothesized model with 6 variables (meaningfulness supplied and needed, a single mediator, 2 moderators, and a dependent variable) is true is 3.52%. In short, Saylor and Trafimow (2021) might suggest that the complexity of the model weakens the validity of any (non)findings.

### **General Discussion**

The present research revitalizes an old management construct: workplace boredom. In doing so, this dissertation reconceptualizes the definition of boredom as “the longing to be occupied” and develops a measure of state boredom across three studies. In addition, this research adds to the growing work on boredom and meaningfulness in adjacent fields.

### **Contributions, Limitations, and Future Research Directions**

This research makes two primary contributions to the growing body of work on boredom. First, this research refines a definition of state boredom and develops two measurement scales that encompasses the full experience of boredom (the global experience and four subdimensions of the experience). Both measurement scales were developed following best practices (Clark &

Watson, 2019; Colquitt, et al., 2019; Heggstad, et al., 2019) across three samples using both subject matter experts and employees. Survey research can be useful in identifying how employees are experiencing boredom and reconstructing work events. The parsimonious measure of boredom (5-item) lends itself particularly valuable and practical for survey designs where survey length is of concern, such as in experiential sampling or daily diary designs. In short, the newly developed measures of state boredom set the foundation for future management research on boredom in the workplace.

Second, by adopting a PE Fit approach (Muchinsky & Monahan, 1987), this work acknowledges that boredom stems from how employees come together with their work environment. In doing so, this is the first empirical test of the joint influence of meaningfulness needed and supplied on boredom; a true examination of the boredom as a signal for meaningfulness hypothesis. Although boredom did not increase in situations of meaningfulness excess as hypothesized, the response surface model illustrates a dramatic increase in boredom when employees experienced meaningfulness deficiency. This is the first model to depict the meaningfulness-boredom relationship in this way and underscores the role a lack of meaning has in triggering boredom.

This study was not without limitations. The nonfindings suggest that either the theoretical reasoning behind the hypotheses is mis specified, the hypothesized model was inaccurate, or the sample context was inappropriate for the research question. The present sample was intentionally selected to be diverse and not occupation or industry specific. However, perhaps the relationships between excess meaningfulness, boredom, and positive behaviors only occur under specific circumstances. These questions open lines of inquiry for future research.

One direction for future research is to uncover under what conditions will bored employees engage in positive behaviors. For example, perhaps environments that offer greater autonomy or foster a culture of empowerment will see a greater likelihood of employees engaging in innovation. It would be ideal to test this question in an experimental or quasi-experimental context. Relatedly, it is interesting that, at least anecdotally, we should allow children to be bored to foster creativity and innovation (Paul, 2019). Yet, this present research did not find evidence of this. Perhaps there is something stifling about boredom in the work environment. Or maybe adults approach resolving boredom differently than children. In Tom Wujec's TedTalk on *The Marshmallow Challenge*, where participants build structures out of spaghetti and marshmallows, he reported that kindergartners routinely outperform even graduate business and law students on this innovative task, building structures that are taller and more imaginative (Wujec, 2010). Maybe as children become adults they become socialized to be less innovative with solving problems in their environment, feel that they have less control over situations, or respond to boredom in more destructive ways. Understanding when boredom can be a good thing would be beneficial.

Another area for future research is to revisit assumptions in management that more workload, task variety, or autonomy is better by applying PE Fit frameworks. People are different and what might be boredom inducing for one employee might not be for another. These types of models would clarify if there is an optimal level of workload, task variety, etc. in mitigating boredom and acknowledge that people vary. This would change the advice to practitioners by offering a more nuanced remedy to boredom than simply increasing workload, etc. In addition, it would be beneficial to see how competing aspects of job design predict boredom-- are some aspects more important than others?

Finally, future research should work to bring boredom into mainstream management research. Boredom has been largely unstudied since the 1950s in management. The work context has changed since then with a greater focus today on leadership, teams, and culture, etc. For example, how do employees react to boring cultures? Conceptual work has suggested experiencing boredom at work can bring employees to question their work identity (Driver, 2022). Conceivably, questioning work identity could either be negative with employees seeking a new job, or it could be positive with employees reevaluating what is important to them and how they could potentially reframe their mindset so that their work or organization is less boring. Additionally, it could be interesting to explore how people react to boring leaders or if boredom can act as a contagion in teams. The findings in this study indicate that boredom was strongly related to negative job attitudes including cynicism and turnover intentions—both attitudes managers would like to avoid in their organizations. Thus, it would be useful to understand the full array of how boredom can manifest in organizations.

### **Implications for Management Practice**

This study makes a practical contribution by offering a new perspective for managers; focusing on increasing workload or task variety to prevent boredom is not always the right solution. Boredom can also stem from lack of meaningfulness so managers should focus on infusing meaning into work. Therefore, by adopting this expanded view of how employees interact within their environment, employers can be encouraged to foster environments where their bored employees can flourish.

## CHAPTER VIII

### CONCLUSION

Boredom is a common experience at work. Existing management research on boredom in the workplace has focused on antecedents such as workload or task variety and limited the examination of consequences to negative work outcomes. As a result, the common advice given to managers is to avoid boredom in the workplace. This dissertation adds to what we know by testing the role meaningfulness has in predicting boredom, as well as exploring the possibility that boredom can spark positive behaviors in the workplace. Results indicate that meaningfulness does predict boredom, specifically in situations when work is less meaningful than desired. Although the final study did not find a positive relationship between boredom and positive work outcomes, this research still makes three important contributions. First, studies 1a-c refine a definition of boredom and develop a corresponding measurement scale, setting the foundation for future research. Second, this work acknowledges that boredom stems from how employees come together with their work environment. Thus, this research offers a nuanced look at what is optimum. Third, this study makes a practical contribution by offering a new perspective for managers. In taking a nuanced view of how well employees fit within their environment, employers can be encouraged to foster workplaces where their bored employees can flourish.



## REFERENCES

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84(5), 888-918.
- Andel, S., Pindek, S., & Arvan, M. L. (2022). Bored, angry, and overqualified? The high- and low-intensity pathways linking perceived overqualification to behavioural outcomes. *European Journal of Work & Organizational Psychology*, 31(1), 47-60.
- Baratta, P. L., & Spence, J. R. (2018). Capturing the noonday demon: development and validation of the State Boredom Inventory. *European Journal of Work and Organizational Psychology*, 27(4), 477-492.
- Barbalet, J. M. (1999). Boredom and social meaning. *The British Journal of Sociology*, 50(4), 631-646.
- Bateman, T. S., & Crant, J. M. (1993). The proactive component of organizational behavior: A measure and correlates. *Journal of Organizational Behavior*, 14(2), 103-118.
- Becker, T. E. (2005). Potential problems in the statistical control of variables in organizational research: A qualitative analysis with recommendations. *Organizational Research Methods*, 8(3), 274-289.
- Bench, S. W., & Lench, H. C. (2013). On the function of boredom. *Behavioral Sciences*, 3(3), 459-472.
- Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 349-381). Jossey-Bass.
- Borst, R. T., Kruiyen, P. M., Lako, C. J., & de Vries, M. S. (2020). The attitudinal, behavioral, and performance outcomes of work engagement: A comparative meta-analysis across the public, semipublic, and private sector. *Review of Public Personnel Administration*, 40(4), 613-640.
- Bruursema, K., Kessler, S. R., & Spector, P. E. (2011). Bored employees misbehaving: The relationship between boredom and counterproductive work behaviour. *Work & Stress*, 25(2), 93-107.
- Cable, D. M., & Edwards, J. R. (2004). Complementary and supplementary fit: a theoretical and empirical integration. *Journal of Applied Psychology*, 89(5), 822-834.
- Carlson, K. D., & Wu, J. (2012). The illusion of statistical control: Control variable practice in management research. *Organizational Research Methods*, 15(3), 413-435.
- Casper, W., Edwards, B. D., Wallace, J. C., Landis, R. S., & Fife, D. A. (2020). Selecting response anchors with equal intervals for summated rating scales. *Journal of Applied Psychology*, 105(4), 390-409.
- Chan, C. S., van Tilburg, W. A., Igou, E. R., Poon, C. Y., Tam, K. Y., Wong, V. U., & Cheung, S. K. (2018). Situational meaninglessness and state boredom: Cross-sectional and experience-sampling findings. *Motivation and Emotion*, 42(4), 555-565.
- Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology*, 64(1), 89-136.
- Clark, L. A., & Watson, D. (2019). Constructing validity: New developments in creating objective measuring instruments. *Psychological Assessment*, 31(12), 1412-1427.
- Cole, D. A., Ciesla, J. A., & Steiger, J. H. (2007). The insidious effects of failing to include design-driven correlated residuals in latent-variable covariance structure analysis. *Psychological Methods*, 12(4), 381-398.
- Cole, M. S., Walter, F., Bedeian, A. G., & O'Boyle, E. H. (2012). Job burnout and employee engagement: A meta-analytic examination of construct proliferation. *Journal of Management*, 38(5), 1550-1581.

- Colquitt, J. A., Sabey, T. B., Rodell, J. B., & Hill, E. T. (2019). Content validation guidelines: Evaluation criteria for definitional correspondence and definitional distinctiveness. *Journal of Applied Psychology, 104*(10), 1243-1265.
- Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology, 78*(1), 98-104.
- Cortina, J. M., Sheng, Z., Keener, S. K., Keeler, K. R., Grubb, L. K., Schmitt, N., ... & Banks, G. C. (2020). From alpha to omega and beyond! A look at the past, present, and (possible) future of psychometric soundness in the Journal of Applied Psychology. *Journal of Applied Psychology, 105*(12), 1351-1381.
- Csikszentmihalyi, M. (1997). *Finding flow*. New York: Basic Books.
- Dalal, R. S. (2005). A Meta-Analysis of the Relationship Between Organizational Citizenship Behavior and Counterproductive Work Behavior. *Journal of Applied Psychology, 90*(6), 1241–1255.
- Danckert, J., & Eastwood, J. D. (2020). *Out of my skull: The psychology of boredom*. Harvard University Press.
- Danckert, J., Hammerschmidt, T., Marty-Dugas, J., & Smilek, D. (2018). Boredom: Under-aroused and restless. *Consciousness and Cognition, 61*, 24-37.
- Danckert, J., Mugon, J., Struk, A., & Eastwood, J. (2018). Boredom: What is it good for?. In *The function of emotions* (pp. 93-119). Springer, Cham.
- DeSimone, J. A., & Harms, P. D. (2018). Dirty data: The effects of screening respondents who provide low-quality data in survey research. *Journal of Business and Psychology, 33*(5), 559-577.
- DeSimone, J. A., Harms, P. D., & DeSimone, A. J. (2015). Best practice recommendations for data screening. *Journal of Organizational Behavior, 36*(2), 171-181.
- Driver, M. (2021). Workplace boredom as an empowering experience: A psychoanalytic reconceptualization of boredom and identity in organizations. *Culture and Organization, 1*-14.
- Eastwood, J. D., & Gorelik, D. (2019). Boredom is a feeling of thinking and a double-edged sword. In *Boredom is in your mind* (pp. 55-70). Springer, Cham.
- Eastwood, J. D., Frischen, A., Fenske, M. J., & Smilek, D. (2012). The unengaged mind: Defining boredom in terms of attention. *Perspectives on Psychological Science, 7*(5), 482-495.
- Edwards, J. R. (1996). An examination of competing versions of the person-environment fit approach to stress. *Academy of Management Journal, 39*(2), 292-339.
- Edwards, J. R. (2008). 4 person–environment fit in organizations: An assessment of theoretical progress. *Academy of Management Annals, 2*(1), 167-230.
- Edwards, J. R. (2011). The fallacy of formative measurement. *Organizational Research Methods, 14*(2), 370-388.
- Edwards, J. R., & Bagozzi, R. P. (2000). On the nature and direction of relationships between constructs and measures. *Psychological Methods, 5*(2), 155–174.
- Edwards, J. R., & Cable, D. M. (2009). The value of value congruence. *Journal of Applied Psychology, 94*(3), 654–677.
- Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: a general analytical framework using moderated path analysis. *Psychological Methods, 12*(1), 1-22.
- Edwards, J. R., & Van Harrison, R. (1993). Job demands and worker health: Three-dimensional reexamination of the relationship between person-environment fit and strain. *Journal of Applied Psychology, 78*(4), 628–648.
- Eisenberger, R., Armeli, S., Rexwinkel, B., Lynch, P. D., & Rhoades, L. (2001). Reciprocation of perceived organizational support. *Journal of Applied psychology, 86*(1), 42-51.
- Elpidorou, A. (2017). The moral dimensions of boredom: A call for research. *Review of General Psychology, 21*(1), 30-48.
- Elpidorou, A. (2018). The bored mind is a guiding mind: Toward a regulatory theory of boredom. *Phenomenology and the Cognitive Sciences, 17*(3), 455-484.
- Elpidorou, A. (2020). Neglected Emotions. *The Monist, 103*(2), 135-146.
- Elsbach, K. D., & Hargadon, A. B. (2006). Enhancing creativity through “mindless” work: A framework of workday design. *Organization Science, 17*(4), 470-483.

- Fahlman, S. A., Mercer-Lynn, K. B., Flora, D. B., & Eastwood, J. D. (2013). Development and validation of the multidimensional state boredom scale. *Assessment, 20*(1), 68-85.
- Farmer, R., & Sundberg, N. D. (1986). Boredom proneness--the development and correlates of a new scale. *Journal of personality assessment, 50*(1), 4-17.
- Fisher, C. D. (1993). Boredom at work: A neglected concept. *Human Relations, 46*(3), 395-417.
- Fisher, C. D. (1998). Effects of external and internal interruptions on boredom at work: Two studies. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior, 19*(5), 503-522.
- Fisher, C. D. (2018). Boredom at work: what, why, and what then?. In *Social functions of emotion and talking about emotion at work*. Edward Elgar Publishing.
- Follmer, E. H., Talbot, D. L., Kristof-Brown, A. L., Astrove, S. L., & Billsberry, J. (2018). Resolution, relief, and resignation: A qualitative study of responses to misfit at work. *Academy of Management Journal, 61*(2), 440-465.
- Frayne, C. A., & Geringer, J. M. (2000). Self-management training for improving job performance: A field experiment involving salespeople. *Journal of Applied Psychology, 85*(3), 361-372.
- Frijda, N. H. (1987). Emotion, cognitive structure, and action tendency. *Cognition and Emotion, 1*(2), 115-143.
- Frijda, N. (2006). *The Laws of Emotion*. Psychology Press.
- Game, A. M. (2007). Workplace boredom coping: Health, safety, and HR implications. *Personnel Review, 36*(5), 701-721.
- Gelbrich, K. (2010). Anger, frustration, and helplessness after service failure: coping strategies and effective informational support. *Journal of the Academy of Marketing Science, 38*(5), 567-585.
- Goetz, T., Frenzel, A. C., Hall, N. C., Nett, U. E., Pekrun, R., & Lipnevich, A. A. (2014). Types of boredom: An experience sampling approach. *Motivation and Emotion, 38*(3), 401-419.
- Goldberg, Y. K., Eastwood, J. D., LaGuardia, J., & Danckert, J. (2011). Boredom: An emotional experience distinct from apathy, anhedonia, or depression. *Journal of Social and Clinical Psychology, 30*(6), 647-666.
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance, 16*(2), 250-279.
- Harju, L. K., & Hakanen, J. J. (2016). An employee who was not there: A study of job boredom in white-collar work. *Personnel Review, 45*(2), 374-391.
- Harmon-Jones, C., Bastian, B., & Harmon-Jones, E. (2016). The discrete emotions questionnaire: A new tool for measuring state self-reported emotions. *PLoS one, 11*(8), e0159915.
- Heggstad, E. D., Scheaf, D. J., Banks, G. C., Monroe Hausfeld, M., Tonidandel, S., & Williams, E. B. (2019). Scale adaptation in organizational science research: A review and best-practice recommendations. *Journal of Management, 45*(6), 2596-2627.
- Heise, D. R. (1972). Employing nominal variables, induced variables, and block variables in path analysis. *Sociological Methods and Research, 1*, 147-173.
- Hill, A. B. (1975). Work variety and individual differences in occupational boredom. *Journal of Applied Psychology, 60*(1), 128-131.
- Hinkin, T. R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods, 1*(1), 104-121.
- Hobfoll, S. E. (1989). Conservation of resources: a new attempt at conceptualizing stress. *American psychologist, 44*(3), 513-524.
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology, 50*(3), 337-421.
- Hobfoll, S. E., Freedy, J., Lane, C., & Geller, P. (1990). Conservation of social resources: Social support resource theory. *Journal of Social and Personal Relationships, 7*(4), 465-478.
- Hoemann, K., Khan, Z., Feldman, M. J., Nielson, C., Devlin, M., Dy, J., Feldman Barrett, L., Wormwood, J., & Quigley, K. S. (2020). Context-aware experience sampling reveals the scale of variation in affective experience. *Scientific Reports, 10*(1), 1-16.

- Ilies, R., Peng, A. C., Savani, K., & Dimotakis, N. (2013). Guilty and helpful: An emotion-based reparatory model of voluntary work behavior. *Journal of Applied Psychology, 98*(6), 1051-1059.
- Jackson, D. L., Gillaspay, J. A., Jr., & Purc-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological Methods, 14*(1), 6–23.
- James, L. R., Demaree, R. G., & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology, 69*(1), 85-98.
- Janssen, O. (2001). Fairness perceptions as a moderator in the curvilinear relationships between job demands, and job performance and job satisfaction. *Academy of Management Journal, 44*, 1039–1050.
- Johnson, J. L., & O'Leary-Kelly, A. M. (2003). The effects of psychological contract breach and organizational cynicism: Not all social exchange violations are created equal. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior, 24*(5), 627-647.
- Johnsen, R. (2016). Boredom and organization studies. *Organization Studies, 37*(10), 1403-1415.
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal, 33*(4), 692– 724.
- Kanfer, R., Frese, M., & Johnson, R. E. (2017). Motivation related to work: A century of progress. *Journal of Applied Psychology, 102*(3), 338–355.
- Kelloway, E. K., Gottlieb, B. H., & Barham, L. (1999). The source, nature, and direction of work and family conflict: A longitudinal investigation. *Journal of Occupational Health Psychology, 4*(4), 337–346.
- Kerr, W. A., & Keil, R. C. (1963). A theory and factory experiment on the time-drag concept of boredom. *Journal of Applied Psychology, 47*(1), 7-9.
- Klapp, O. E. (1986). *Overload and boredom: Essays on the quality of life in the information society*. Greenwood Publishing Group Inc.
- Koch, A., Alves, H., Krüger, T., & Unkelbach, C. (2016). A general valence asymmetry in similarity: Good is more alike than bad. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 42*(8), 1171-1192.
- Kristof, A. L. (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Personnel psychology, 49*(1), 1-49.
- Kristof, A. L. (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Personnel Psychology, 49*(1), 1-49.
- Kristof-Brown, A., & Guay, R. P. (2011). Person–environment fit. In *APA handbook of industrial and organizational psychology, Vol 3: Maintaining, expanding, and contracting the organization*. (pp. 3-50). American Psychological Association.
- Kwon, K., & Kim, T. (2020). An integrative literature review of employee engagement and innovative behavior: Revisiting the JD-R model. *Human Resource Management Review, 30*(2), 100704.
- Lambert, L. S., Bingham, J. B., & Zabinski, A. (2020). Affective commitment, trust, and the psychological contract: contributions matter, too!. *European Journal of Work and Organizational Psychology, 29*(2), 294-314.
- Lanaj, K., Foulk, T. A., & Erez, A. (2019). Energizing leaders via self-reflection: A within-person field experiment. *Journal of Applied Psychology, 104*(1), 1-18.
- Lanaj, K., Johnson, R. E., & Wang, M. (2016). When lending a hand depletes the will: The daily costs and benefits of helping. *Journal of Applied Psychology, 101*(8), 1097-1110.
- Lance, C. E., & Vandenberg, R. J. (2002). *Confirmatory factor analysis*. In F. Drasgow & N. Schmitt (Eds.), *The Jossey-Bass business & management series. Measuring and analyzing behavior in organizations: Advances in measurement and data analysis* (p. 221–254). Jossey-Bass.
- LeBreton, J. M., & Senter, J. L. (2008). Answers to 20 questions about interrater reliability and interrater agreement. *Organizational Research Methods, 11*(4), 815-852.
- Lee, F. K., & Zelman, D. C. (2019). Boredom proneness as a predictor of depression, anxiety and stress: The moderating effects of dispositional mindfulness. *Personality and Individual Differences, 146*, 68-75.
- Lin, B., Law, K. S., & Zhou, J. (2017). Why is underemployment related to creativity and OCB? A task-crafting explanation of the curvilinear moderated relations. *Academy of Management Journal, 60*(1), 156-177.

- Locke, E. A. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), *The Handbook of Industrial and Organizational Psychology* (pp. 1297-1349). Holt, Reinhart & Winston.
- Locke, E. A., & Bryan, J. F. (1967). Performance goals as determinants of level of performance and boredom. *Journal of Applied Psychology, 51*(2), 120-130.
- London, H., Schubert, D. S., & Washburn, D. (1972). Increase of autonomic arousal by boredom. *Journal of Abnormal Psychology, 80*(1), 29-36.
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*(6), 803-855.
- MacCallum, R. C., & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology, 51*(1), 201-226.
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multipl-determined Behavioral Research, 39*(1), 99-128.
- Mael, F. & Jex, S. (2015). Workplace boredom: An integrative model of traditional and contemporary approaches. *Group & Organization Management, 40*(2), 131-159.
- Marsden, P. V. (1982). A note on block variables in multiequation models. *Social Science Research, 11*, 127-140.
- Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *MBI: Maslach burnout inventory*. Palo Alto, CA: Consulting Psychologists Press.
- McClelland, D. C. (1987). *Human motivation*. New York, NY: Cambridge.
- Meade, A. W., & Craig, S. B. (2012). Identifying careless responses in survey data. *Psychological Methods, 17*(3), 437-455.
- Merrifield, C., & Danckert, J. (2014). Characterizing the psychophysiological signature of boredom. *Experimental Brain Research, 232*(2), 481-491.
- Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology, 91*(6), 1321-1339.
- Muchinsky, P. M., & Monahan, C. J. (1987). What is person-environment congruence? Supplementary versus complementary models of fit. *Journal of Vocational Behavior, 31*(3), 268-277.
- Paul, P. (2019, February 2). Let children be bored again: Boredom teaches us that life isn't a parade of amusements. More important, it spawns creativity and self-sufficiency. *The New York Times*.
- Park, G., Lim, B. C., & Oh, H. S. (2019). Why being bored might not be a bad thing after all. *Academy of Management Discoveries, 5*(1), 78-92.
- Parker, S. K., Wang, Y., & Liao, J. (2019). When is proactivity wise? A review of factors that influence the individual outcomes of proactive behavior. *Annual Review of Organizational Psychology and Organizational Behavior, 6*, 221-248.
- Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review, 18*(4), 315-341.
- Pekrun, R., Goetz, T., Daniels, L. M., Stupnisky, R. H., & Perry, R. P. (2010). Boredom in achievement settings: Exploring control-value antecedents and performance outcomes of a neglected emotion. *Journal of Educational Psychology, 102*(3), 531-549.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2016). Recommendations for creating better concept definitions in the organizational, behavioral, and social sciences. *Organizational Research Methods, 19*(2), 159-203.
- Raffaelli, Q., Mills, C., & Christoff, K. (2018). The knowns and unknowns of boredom: A review of the literature. *Experimental Brain Research, 236*(9), 2451-2462.
- Reijseger, G., Schaufeli, W. B., Peeters, M. C., Taris, T. W., Van Beek, I., & Ouweneel, E. (2013). Watching the paint dry at work: Psychometric examination of the Dutch Boredom Scale. *Anxiety, Stress & Coping, 26*(5), 508-525.
- Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: a review of the literature. *Journal of Applied Psychology, 87*(4), 698-714.

- Roberts, T. P., & Zigarmi, D. (2014). The impact of dispositional cynicism on job-specific affect and work intentions. *International Journal of Psychology, 49*(5), 381-389.
- Rodell, J. (2013). Finding meaning through volunteering: Why do employees volunteer and what does it mean for their jobs? *Academy of Management Journal, 56*(5), 1274–1294.
- Roth, P. L., Switzer III, F. S., & Switzer, D. M. (1999). Missing data in multiple item scales: A Monte Carlo analysis of missing data techniques. *Organizational Research Methods, 2*(3), 211-232.
- Roy, D. F. (1959). "Banana Time" Job Satisfaction and Informal Interaction. *Human Organization, 18*(4), 158-168.
- Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology, 39*(6), 1161-1178.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.
- Sahay, S., & Dwyer, M. (2021). Emergent organizing in crisis: US nurses' sensemaking and job crafting during COVID-19. *Management Communication Quarterly, 35*(4), 546-571.
- Sandrin, E., Morin, A. J., Fernet, C., & Gillet, N. (2020). A Longitudinal Person-Centered Perspective on Positive and Negative Affect at Work. *The Journal of Psychology, 154*(7), 499-532.
- Saylor, R., & Trafimow, D. (2021). Why the increasing use of complex causal models is a problem: On the danger sophisticated theoretical narratives pose to truth. *Organizational Research Methods, 24*(3), 616-629.
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement, 66*(4), 701-716.
- Schneider, B. (1987). The people make the place. *Personnel Psychology, 40*(3), 437-453.
- Schneider, B., Goldstein, H. W., & Smith, D. B. (1995). The ASA framework: An update. *Personnel Psychology, 48*(4), 747-773.
- Schooler, C., Mulatu, M. S., & Oates, G. (2004). Occupational self-direction, intellectual functioning, and self-directed orientation in older workers: Findings and implications for individuals and societies. *American Journal of Sociology, 110*(1), 161-197.
- Schutte, N., Searle, T., Meade, S., & Dark, N. (2012). The effect of meaningfulness and integrative processing in expressive writing on positive and negative affect and life satisfaction. *Cognition & Emotion, 26*(1), 144–152.
- Shin, J., & Grant, A. M. (2019). Bored by interest: How intrinsic motivation in one task can reduce performance on other tasks. *Academy of Management Journal, 62*(2), 415-436.
- Siemsen, E., Roth, A., & Oliveira, P. (2010). Common method bias in regression models with linear, quadratic, and interaction effects. *Organizational Research Methods, 13*(3), 456-476.
- Smith, P. C. (1953). The curve of output as a criterion of boredom. *Journal of Applied Psychology, 37*(2), 69-74.
- Solomon, R. C. (2004). Emotions, thoughts, and feelings: Emotions as engagements with the world. In R. Solomon (Ed.), *Thinking about feeling: Contemporary philosophers on emotions* (pp. 76-90). Oxford University Press.
- Spector, P. E. (2021). Mastering the use of control variables: The hierarchical iterative control (HIC) approach. *Journal of Business and Psychology, 36*(5), 737-750.
- Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal, 38*(5), 1442-1465.
- Struk, A. A., Carriere, J. S., Cheyne, J. A., & Danckert, J. (2017). A short boredom proneness scale: Development and psychometric properties. *Assessment, 24*(3), 346-359.
- Struk, A. A., Scholer, A. A., & Danckert, J. (2021). Perceptions of control influence feelings of boredom. *Frontiers in Psychology, 12*, 2698.
- Struk, A. A., Scholer, A. A., Danckert, J., & Seli, P. (2020). Rich environments, dull experiences: How environment can exacerbate the effect of constraint on the experience of boredom. *Cognition and Emotion, 34*(7), 1517-1523.
- Tam, K. Y., Van Tilburg, W. A., Chan, C. S., Igou, E. R., & Lau, H. (2021). Attention drifting in and out: The boredom feedback model. *Personality and Social Psychology Review, 25*(3), 251-272.

- Tellegen, A. (1985). Structures of mood and personality and their relevance to assessing anxiety, with an emphasis on self-report. In A. H. Tuma & J. D. Maser (Eds.), *Anxiety and the anxiety disorders* (p. 681–706). Lawrence Erlbaum Associates, Inc.
- Tepper, B. J., Dimotakis, N., Lambert, L. S., Koopman, J., Matta, F. K., Man Park, H., & Goo, W. (2018). Examining follower responses to transformational leadership from a dynamic, person–environment fit perspective. *Academy of Management Journal*, *61*(4), 1343-1368.
- Thompson, E. R. (2007). Development and validation of an internationally reliable short-form of the positive and negative affect schedule (PANAS). *Journal of Cross-Cultural Psychology*, *38*(2), 227-242.
- Todman, M. (2013). The dimensions of state boredom: Frequency, duration, unpleasantness, consequences and causal attributions. *Educational Research International 1* (1), 32-40.
- Toohey, P. (2011). *Boredom: A lively history*. Yale University Press.
- Tze, V. M., Daniels, L. M., & Klassen, R. M. (2016). Evaluating the relationship between boredom and academic outcomes: A meta-analysis. *Educational Psychology Review*, *28*(1), 119-144.
- Unkelbach, C., Fiedler, K., Bayer, M., Stegmüller, M., & Danner, D. (2008). Why positive information is processed faster: The density hypothesis. *Journal of Personality and Social Psychology*, *95*(1), 36-49.
- Velasco, F. (2017). Understanding workplace boredom among service employees: Qualitative insights and employee outcomes. *Journal of Managerial Issues*, *29*(3), 278-293.
- van Hooff, E. A., & van Hooff, M. L. (2018). The state of boredom: Frustrating or depressing?. *Motivation and Emotion*, *42*(6), 931-946.
- van Tilburg, W. A., & Igou, E. R. (2011). On boredom and social identity: A pragmatic meaning-regulation approach. *Personality and Social Psychology Bulletin*, *37*(12), 1679-1691.
- van Tilburg, W. A., & Igou, E. R. (2012). On boredom: Lack of challenge and meaning as distinct boredom experiences. *Motivation and Emotion*, *36*(2), 181-194.
- van Tilburg, W. A., & Igou, E. R. (2017). Can boredom help? Increased prosocial intentions in response to boredom. *Self and Identity*, *16*(1), 82-96.
- van Vianen, A. E. (2018). Person–environment fit: A review of its basic tenets. *Annual Review of Organizational Psychology and Organizational Behavior*, *5*, 75-101.
- Vandenberg, R. J., & Grelle, D. M. (2009). Alternative model specifications in structural equation modeling: Facts, fictions, and truth. In C. E. Lance & R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity and fable in the organizational and social sciences* (pp. 165–192). New York, NY: Routledge, Taylor & Francis Group.
- Vogel, R. M., Rodell, J. B., & Sabey, T. B. (2020). Meaningfulness misfit: Consequences of daily meaningful work needs–supplies incongruence for daily engagement. *Journal of Applied Psychology*, *105*(7), 760-770.
- Walter, S. L., Seibert, S. E., Goering, D., & O’Boyle, E. H. (2019). A tale of two sample sources: Do results from online panel data and conventional data converge?. *Journal of Business and Psychology*, *34*(4), 425-452.
- Waterschoot, J., Van der Kaap-Deeder, J., Morbée, S., Soenens, B., & Vansteenkiste, M. (2021). “How to unlock myself from boredom?” The role of mindfulness and a dual awareness-and action-oriented pathway during the COVID-19 lockdown. *Personality and Individual Differences*, *175*, 110729.
- Warr, P. (1987). *Work, unemployment, and mental health*. Oxford University Press.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063.
- Weiss, H. M., & Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior: An annual series of analytical essays and critical reviews*, Vol. 18 (p. 1–74). Elsevier Science/JAI Press.
- Westgate, E. C. (2020). Why boredom is interesting. *Current Directions in Psychological Science*, *29*(1), 33-40.
- Westgate, E. C., & Wilson, T. D. (2018). Boring thoughts and bored minds: The MAC model of boredom and cognitive engagement. *Psychological Review*, *125*(5), 689-713.

- Williams, L. J., & O'Boyle Jr, E. (2011). The myth of global fit indices and alternatives for assessing latent variable relations. *Organizational Research Methods, 14*(2), 350-369.
- Williams, L. J., O'Boyle, E. H., & Yu, J. (2020). Condition 9 and 10 tests of model confirmation: A review of James, Mulaik, and Brett (1982) and contemporary alternatives. *Organizational Research Methods, 23*(1), 6-29.
- Wu, C. H., Parker, S. K., Wu, L. Z., & Lee, C. (2018). When and why people engage in different forms of proactive behavior: Interactive effects of self-construals and work characteristics. *Academy of Management Journal, 61*(1), 293-323.
- Wujec, T. (2010, February). Build a tower, build a team. *Ted Talk*.  
[https://www.ted.com/talks/tom\\_wujec\\_build\\_a\\_tower\\_build\\_a\\_team?language=en](https://www.ted.com/talks/tom_wujec_build_a_tower_build_a_team?language=en)
- Zickar, M. J. (2020). Measurement development and evaluation. *Annual Review of Organizational Psychology and Organizational Behavior, 7*, 213-232.



## FOOTNOTES

<sup>1</sup> Other empirical works include meaningfulness but rely on it as an explanatory mechanism illustrating why boredom can act as a motivator seeking more meaningful behaviors (*see* van Tilburg & Igou, 2011; 2012).

<sup>2</sup> Some of the methodological issues in existing measures of boredom include low internal reliability, formative models, and the use of Principal Components Analysis. Why these issues is described in greater detail here. Internal reliability is an indication of how well the items are representing the same idea (Cortina, 1993). Low internal reliability indicates that the items are not representing the same idea and threaten content validity of the measure. Each measure relies on a model structure where either the items reflect the definition of the construct, known as reflective measures, or the items are combined to form the construct and thus define it, known as formative (Edwards, 2011). Formative models present a variety of methodological issues including, but not limited to assumed to be measured without error, impossible to identify without the addition of a reflective measure, and construct meaning changes with each sample since the items *cause* the construct, threatening construct validity. A suggested practice for developing new measures is to generate more items than necessary and use factor analysis to identify the best items (Hinkin, 1998; Zickar, 2020). One factor analysis method creates the simplest factor structure based on the maximum common variance between items, putting them into components, known as Principal Components Analysis (Lance & Vandenberg, 2002). These components do not necessarily reflect common latent variables, unlike Factor Analysis which groups items together and therefore factors developed in this method do reflect common latent variables. As such, Principal Components Analysis is problematic in that it is difficult to substantively interpret and proceed with identifying the best items for a measure.

<sup>3</sup> The second principal axis was calculated (Edwards, 2002), however, it is in a region where there is no data (i.e., region of excess), see Figures 2 and 3. Therefore, I do not report nor interpret those results.

## TABLES

**Table 1**

*Common Definitions of State Boredom*

Author(s)	Conceptualization of State Boredom	Key Attributes
Fisher (1993)	<i>An unpleasant, transient affective state in which the individual feels a pervasive lack of interest in and difficulty concentrating on the current activity . . . [and] feels that it takes conscious effort to maintain or return attention to that activity. (p. 396)</i>	Unpleasant Lack of interest Difficulty concentrating Difficulty maintaining effort
Barbalet (1999)	<i>A leading characteristic of boredom...is a feeling of not being involved or engaged by events of activities (p.634) ...an experience of dullness or lack of vital interest (p.634) It is the absence of meaning or purpose that functionless repetition sponsors which underlies boredom (p.635)</i>	Longing to be occupied Lack of interest Lack of meaning Unpleasant
van Tilburg & Igou (2012)	<i>Lack of challenge and meaning (p. 182)</i>	Lack of meaning
Eastwood, et al., (2012)	<i>The aversive state of wanting, but being unable, to engage in a satisfying activity (p. 483)</i>	Longing to be occupied Unpleasant
Reijseger, et al., (2013)	<i>boredom at work results from having an unchallenging, ‘passive’ job (p.508) a state of low arousal and dissatisfaction that results from an understimulating work environment (p. 509)</i>	Unchallenging Unpleasant
Elpidorou (2018)	<i>Boredom informs one of the presence of an unsatisfactory situation and, at the same time, it motivates one to pursue a new goal when the current goal ceases to be satisfactory, attractive or meaningful. (p. 455)</i>	Longing to be occupied Unpleasant
Baratta & Spence (2018)	<i>...disengagement is a key component of state boredom, which we define as a longing to engage in an unspecified satisfying activity (p.478)</i>	Difficulty concentrating Longing to be occupied
Danckert, Hammerschmidt, et al., (2018)	<i>disengaged state in which the individual is motivated to be engaged with their environment, but for whom all attempts to do so fail (p. 24)</i>	Longing to be occupied

Westgate & Wilson (2018)	<i>boredom is the result of (a) an attentional component, namely mismatches between cognitive demands and available mental resources, and (b) a meaning component, namely mismatches between activities and valued goals (or the absence of valued goals altogether) (p. 689)</i>	Difficulty concentrating Lack of meaning
Danckert & Eastwood (2020)	<i>Boredom is the uncomfortable feeling of wanting, but being unable to, engage in satisfying activity (p.19)</i>	Longing to be occupied Unpleasant
Present Study	<i>Boredom is the unpleasant state of longing to be occupied</i>	Unpleasant Longing to be occupied

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**Table 2***Subdimensions in Existing Boredom Measures and Their Relationship with Boredom*

Subdimension	Description of Subdimension	Distinction from State Boredom	Estimated Relationship Strength & Direction
Depression	<i>A clinical disorder marked by persistent low mood.</i>	Depression can sometimes act as an antecedent of boredom, but it not a requirement.	+ Weak
Disengagement	<i>Unwillingness to apply effort to a task</i>	Disengagement can act as a correlate of boredom, but it is not a requirement.	+ Weak
Engagement	<i>Effort applied to a task</i>	Although boredom can occur while working on a task, it can also occur in the absence of a task to engage with.	- Weak
High Arousal	<i>High activation of energy or tension</i>	Boredom can sometimes act as a correlate of high arousal, but not all people who feel bored will also experience high arousal. Additionally, not all high arousal states will tie to boredom (e.g., anger or lust).	+ Moderate
Inattention	<i>Inability to maintain focus on a task or activity</i>	Inattention can act as a correlate of boredom, but it is not a requirement.	+ Weak
Low Arousal	<i>Low activation of energy or tension</i>	Boredom can sometimes act as a correlate of low arousal, but not all people who feel bored will also experience low arousal. Additionally, not all low arousal states tie to boredom (e.g., sleepy or content).	+ Moderate
Task Significance	<i>The degree to which a job influences the lives or work of others</i>	The cause of state boredom is not limited to the significance of a task.	- Moderate
Task Variety	<i>The amount of variation in a work task</i>	Task variety, a job characteristic, can sometimes act as an antecedent of boredom, but is not a requirement.	- Moderate
Time Drag	<i>Perception that time is moving slowly</i>	Time drag is a correlate of negative states, such as boredom, fear, and sadness.	+ Moderate
Workload	<i>The amount of work to do</i>	Workload, a job characteristic, can sometimes act as an antecedent of boredom, but is not a requirement.	- Moderate

**Table 3***Existing Measures of State Boredom*

Source	Definition	Scale Description	Arousal Level	Methodological Issues
Fisher (1998)	<i>"an unpleasant, transient affective state in which the individual feels a pervasive lack of interest in and difficulty concentrating on the current activity . . . [and] feels that it takes conscious effort to maintain or return attention to that activity'." (p. 503)</i>	<ul style="list-style-type: none"> <li>• 22 items, <math>\alpha=.56</math></li> <li>• Formative, 4 factors: mind-wandering, boredom, symptoms of boredom, inattention</li> </ul>	N/A	<ul style="list-style-type: none"> <li>• Formative</li> <li>• Reverse Scoring Used</li> <li>• Conflates consequences with boredom</li> </ul>
van Tilburg & Igou (2012)	N/A	<ul style="list-style-type: none"> <li>• 7 items, <math>\alpha=.78-.80</math></li> <li>• Reflective</li> </ul>	N/A	<ul style="list-style-type: none"> <li>• The items are not derived from a definition</li> </ul>
Fahlman et al (2013)	<i>"Boredom is the aversive experience of having an unfulfilled desire to be engaged in satisfying activity." (pp. 69-70)</i>	<ul style="list-style-type: none"> <li>• 26 items, alpha for each factor ranges between .80-.92</li> <li>• Formative, 5 factors: disengagement, high arousal, low arousal, inattention, time perception</li> </ul>	Low and High	<ul style="list-style-type: none"> <li>• Formative</li> <li>• Conflates other emotions with boredom</li> </ul>
Todman (2013)	N/A	<ul style="list-style-type: none"> <li>• 8 items, <math>\alpha=.81</math></li> <li>• Formative, 4 factors: <i>unnamed</i></li> </ul>	N/A	<ul style="list-style-type: none"> <li>• Formative</li> <li>• Conflates causes with boredom</li> </ul>
Reijseger, et al (2013)	<i>"Boredom at work is a state of employee unwell-being that is characterized by relatively low arousal and high dissatisfaction...that results from an under stimulating work environment" (p. 508-509)</i>	<ul style="list-style-type: none"> <li>• 6 items, <math>\alpha=.80</math></li> <li>• Reflective</li> </ul>	Low	<ul style="list-style-type: none"> <li>• The items are not derived from a definition</li> <li>• Conflates causes and consequences with boredom</li> <li>• Statistical model evaluation used: standardized scores, PCA, allowed errors to correlate to improve model fit, and SEM analysis used parceling</li> </ul>
Baratta & Spence (2018)	<i>"we define state boredom as a lethargic, deactivated negative state (unpleasant low arousal) in which one is unable to focus attention (inattention) and experiences a longing to engage in an unspecified satisfying activity (disengagement)" (p. 479)</i>	<ul style="list-style-type: none"> <li>• 11, <math>\alpha=.91</math></li> <li>• Formative, 3 factors: disengagement, low arousal, inattention</li> </ul>	Low	<ul style="list-style-type: none"> <li>• Formative</li> <li>• Statistical model evaluation used: convergent/discriminant validities for each dimension rather than as a single unit for state boredom</li> </ul>

**Table 4***Subject Matter Expert Ratings of Correspondence between Items and Construct Definitions*

Construct	Item	Boredom		Emot. Ex.		Absorption		<i>htc</i>	<i>htd</i>	ANOVA
		rWG	$\bar{x}$	rWG	$\bar{x}$	rWG	$\bar{x}$			
Boredom	<b>I feel bored</b>	0.90	4.69	0.73	1.68	0.66	1.63	0.94	0.76	YES
	I feel like doing something completely different	0.42	3.31	0.67	1.80	0.62	1.68	0.66	0.39	YES
	<b>I wish I was doing something more exciting</b>	0.60	4.38	0.66	1.88	0.59	1.64	0.88	0.66	YES
	I feel restless	0.57	3	0.57	2.12	0.92	1.40	0.60	0.31	YES
	I seem to be forced to do things that have no value to me	0.57	2.46	0.59	2.08	0.90	1.28	0.49	0.20	NO
	I am stuck in a situation that I feel is irrelevant	0.45	2.85	0.53	2.08	0.94	1.24	0.57	0.30	YES
	I am wasting time that would be better spent on something else	0.37	2.96	0.68	1.84	0.75	1.44	0.59	0.33	YES
	<b>I want to do something, but I don't know what</b>	0.75	4.12	0.79	1.68	0.85	1.28	0.82	0.66	YES
	<b>I feel like I'm sitting around waiting for something to happen</b>	0.76	4.08	0.60	1.76	0.89	1.36	0.82	0.63	YES
	It is taking a lot of effort to maintain my attention	0.35	2.54	0.56	3.16	0.51	1.68	0.51	0.03	NO
	<b>I am having difficulty maintaining my attention</b>	0.34	2.69	0.55	3.12	0.42	2.00	0.54	0.03	NO
	<b>It is difficult to focus my attention</b>	0.31	2.69	0.46	2.96	0.54	1.84	0.54	0.07	NO
	<b>My mind is wandering</b>	0.24	2.73	0.57	2.42	0.39	2.00	0.55	0.13	NO
	During work time I daydream	0.40	2.96	0.75	1.92	0.50	2.00	0.59	0.25	YES
	<b>I am lacking energy</b>	0.81	1.81	0.81	4.40	0.83	1.40	0.36	-0.27	NO
	<b>I feel sluggish</b>	0.62	2.12	0.59	3.64	0.93	1.28	0.42	-0.09	YES
	I feel drowsy	0.65	1.81	0.53	3.20	0.90	1.32	0.36	-0.11	NO
	<b>I feel fatigued</b>	0.72	1.85	0.89	4.44	0.92	1.32	0.37	-0.26	YES
	<b>Time is dragging on</b>	0.49	3.42	0.60	2.24	0.58	1.76	0.68	0.36	YES
	<b>Time is moving very slowly</b>	0.52	3.35	0.77	1.88	0.38	1.96	0.67	0.36	YES
<b>At work, time goes by very slowly</b>	0.43	3.27	0.72	1.92	0.28	2.08	0.65	0.32	YES	
It seems as if my working day never ends	0.29	2.84	0.52	2.76	0.43	1.96	0.57	0.12	NO	
Emotional Ex.	Feel burned out	0.86	1.54	0.92	4.64	0.89	1.40	0.31	-0.37	NO
	Tired to face another day	0.66	1.88	0.82	4.28	0.91	1.24	0.38	-0.22	YES
Absorp.	I get carried away when I am working	0.81	1.46	0.77	1.52	0.45	4.08	0.29	-0.34	NO
	I feel happy when I am working intensely	0.86	1.42	0.80	1.54	0.56	4.20	0.28	-0.36	NO
Anxiety	I feel anxious	0.87	1.65	0.47	2.60	0.94	1.20	0.33	-0.06	NO
	I feel nervous	0.89	1.54	0.64	2.40	0.93	1.28	0.31	-0.08	NO
Apathy	There is nothing I feel like doing, nothing elicits my interest	0.38	2.88	0.41	2.56	0.75	1.44	0.58	0.22	NO
	I do not want to have anything to do with anything	0.51	2.12	0.43	3.04	0.93	1.28	0.42	-0.01	YES

Note: Emotional Ex. = Emotional Exhaustion. Items in **bold** retained for study 1c.

**Table 5***Nomological Network for State Boredom*

Author(s)	Definition of Construct in Literature	Distinction from State Boredom	Predicted Relationship Strength & Direction
<b>Absorption</b> Schaufeli, et al. (2006)	<i>Being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work.</i>	Boredom is marked by discomfort and a slow passage of time	- Moderate
<b>Apathy</b> Danckert & Eastwood (2020)	<i>Lack of interest and low motivation to do something.</i>	State boredom is marked by motivation to do something	+ Weak
<b>Depletion</b> Lanaj, et al. (2016)	<i>Energy consumed when regulating attention, persevering at difficult tasks, and managing emotions.</i>	Boredom is not limited to occurring when presented with a difficult task	+ Weak
<b>Emotional Exhaustion</b> Maslach, et al. (1996)	<i>Feelings of being emotionally overextended and worn out with work.</i>	Boredom is not limited to being accompanied by feelings of exhaustion, but can also be accompanied by feelings of motivation and the desire to pursue certain tasks	+ Weak
<b>Meaningfulness</b> Spritzer (1995)	<i>Meaningfulness is the value of a work goal or purpose, judged in relation to an individual's own ideals or standards.</i>	State boredom is not limited to being caused by a lack of meaningfulness	- Moderate
<b>Positive Affect</b> Watson, et al. (1988)	<i>The extent to which a person feels enthusiastic, active, and alert.</i>	PA is a general feeling whereas boredom is a discrete emotion	- Moderate
<b>Task Significance</b> Morgeson & Humphrey (2006)	<i>Reflects the degree to which a job influences the lives or work of others, whether inside or outside the organization.</i>	The cause of state boredom is not limited to the significance of a task	- Moderate

Note: Relationship strength: low correlation  $r^2 = .1 - .3$ , moderate  $r^2 = .4 - .6$

**Table 6***Study 1c CFA Goodness of Fit Statistics*

Model	$\chi^2$	<i>df</i>	RMSEA	CFI
M1 Boredom 15-item Collapsed	1856.34*	91	.26 (.25, .27)	.67
M2 Boredom 13-item Collapsed	1355.33*	65	.26 (.25, .27)	.72
M3 Boredom 4 Subdimensions	715.15*	61	.19 (.18, .20)	.86
M4 Boredom 5-item Collapsed	15.70*	5	.09 (.04, .13)	.72
M5 4 Factor, Boredom 13-item	2195.11*	246	.16 (.16, .17)	.78
M6 4 Factor, Boredom 5-item	625.47*	98	.14 (.12, .15)	.90
M7 3 Factor, Boredom 5-item	753.81*	101	.15 (.14, .16)	.87
M8 4 Factor, Boredom 13-item	2073.69*	269	.15 (.14, .16)	.80
M9 4 Factor, Boredom 5-item	599.15*	113	.12 (.11, .13)	.90
M10 3 Factor, Boredom 13-item	1776.56*	227	.15 (.15, .16)	.75
M11 3 Factor, Boredom 5-item	305.52*	87	.09 (.08, .10)	.91
M12 Hypothesized 8 Factor Model: Boredom 13-item	3957.16*	953	.10 (.10, .11)	.80
M13 Hypothesized 8 Factor Model: Boredom 5-item	2133.27*	629	.09 (.09, .09)	.87

Note: \*Indicates  $p < .001$ ;  $N = 297$

Model 1 was comprised of 15 boredom items (single global boredom item, 4-items each for low arousal and inattention, 3-items each for high arousal and time drag). Model 2 modified Model 1 to drop the lowest loading inattention and low arousal items. Model 3 gave each subdimension its own factor with the single global item loading set to 1. Model 4 was a single factor measure of boredom with the strongest loading items from each subdimension and the single global boredom item. Model 5 was comprised of apathy, depletion, emotional exhaustion, and boredom (13-item). Model 6 was Model 5 with the 5-item boredom measure. Model 7 was modified Model 6 with depletion and emotional exhaustion collapsed. Model 8 was comprised of absorption, meaningfulness, task significance, and boredom (13-item). Model 9 was Model 8 with the 5-item boredom measure. Model 10 was comprised of positive and negative affect and boredom (13-item). Model 11 was modified Model 10 with 5-item boredom. Model 12 was the hypothesized 8 factor model with all variables and 13-item boredom. Model 13 was modified Model 12 with 5-item boredom.



**Table 7***Study 1c Correlation Table*

	$\bar{X}$	$\sigma$	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Absorption	4.33	1.53	<i>0.91</i>												
2. Apathy	1.95	1.37	-.34**	<i>0.93</i>											
3. Depletion	2.18	1.50	-.39**	.83**	<i>0.94</i>										
4. Emotional Exhaustion	2.33	1.63	-.38**	.69**	.85**	<i>0.93</i>									
5. Meaningfulness	4.75	1.80	.58**	-.39**	-.40**	-.40**	<i>0.98</i>								
6. Positive Affect	4.72	1.37	.62**	-.46**	-.47**	-.44**	.69**	<i>0.83</i>							
7. Task Significance	4.48	1.73	.36**	-.23**	-.22**	-.23**	.60**	.56**	<i>0.90</i>						
8. Boredom 5-item	2.63	1.51	-.51**	.70**	.78**	.72**	-.49**	-.52**	-.25**	<i>0.88</i>					
9. Boredom 13-item	2.71	1.50	-.51**	.71**	.78**	.72**	-.48**	-.51**	-.25**	.99**	<i>0.96</i>				
10. High Arousal Facet	3.02	1.69	-.37**	.57**	.54**	.50**	-.44**	-.40**	-.22**	.82**	.84**	<i>0.83</i>			
11. Inattention Facet	2.52	1.58	-.41**	.67**	.70**	.59**	-.41**	-.46**	-.24**	.87**	.90**	.72**	<i>0.94</i>		
12. Low Arousal Facet	2.42	1.60	-.41**	.61**	.78**	.79**	-.35**	-.41**	-.14*	.84**	.84**	.56**	.67**	<i>0.96</i>	
13. Time Drag Facet	2.81	1.90	-.57**	.65**	.73**	.68**	-.46**	-.51**	-.29**	.90**	.92**	.67**	.77**	.75**	<i>0.98</i>

Note: N=288-197, \*p<.01 \*\*p<.001. Cronbach's alphas presented along the diagonal

**Table 8***Study 2 Correlation Table*

	$\bar{X}$	$\sigma$	1	2	3	4	5	6	7	8	9	10
1. Meaningfulness Needs	5.39	1.14	0.88									
2. Meaningfulness Supplies	4.58	1.45	.58**	0.91								
3. Boredom (13-item)	3.16	1.56	-.18**	-.49**	0.96							
4. Boredom (5-item)	3.10	1.56	-.20**	-.51**	.99**	0.88						
5. Absorption	4.20	1.39	.37**	.58**	-.58**	-.58**	0.90					
6. Positive Affect	4.41	1.38	.40**	.55**	-.58**	-.59**	.63**	0.86				
7. Negative Affect	1.74	0.95	-0.07	-.23**	.56**	.55**	-.30**	-.24**	0.84			
8. Trait Boredom	2.58	1.28	-.24**	-.39**	.78**	.77**	-.49**	-.50**	.55**	0.91		
9. Proactive Personality	4.71	1.23	.35**	.32**	-.28**	-.28**	.42**	.45**	-.23**	-.32**	0.88	
10. Perceived Org. Support	4.41	1.66	.35**	.59**	-.52**	-.52**	.56**	.49**	-.36**	-.42**	.38**	0.96
11. Frustration	2.43	1.57	-.14**	-.40**	.67**	.66**	-.49**	-.41**	.66**	.57**	-.20**	-.60**
12. Cynicism	2.58	1.61	-.14**	-.37**	.54**	.53**	-.41**	-.31**	.51**	.49**	-.15**	-.67**
13. Turnover Intentions	2.79	1.96	-.12**	-.46**	.59**	.58**	-.46**	-.38**	.44**	.48**	-.09*	-.59**
14. Citizenship Behavior	4.23	1.67	.37**	.45**	-.35**	-.36**	.53**	.46**	-.18**	-.31**	.40**	.54**
15. Skill Building	5.09	1.52	.42**	.47**	-.35**	-.35**	.53**	.49**	-.15**	-.36**	.41**	.50**
16. Innovative Behavior	4.54	1.55	.45**	.49**	-.33**	-.34**	.56**	.53**	-.15**	-.33**	.60**	.55**
17. Citizenship Behavior T2	3.79	1.75	.33**	.42**	-.30**	-.30**	.46**	.44**	-.08*	-.24**	.33**	.41**
18. Skill Building T2	4.28	1.73	.32**	.45**	-.32**	-.32**	.44**	.43**	-0.07	-.26**	.35**	.44**
19. Innovative Behavior T2	3.67	1.76	.36**	.45**	-.29**	-.31**	.45**	.45**	-.09*	-.26**	.49**	.44**
20. Age	37.01	10.59	0.07	.15**	-.25**	-.26**	.16**	.28**	-.16**	-.29**	.08*	0.05
21. Gender (0=M, 1=F)	0.49	0.50	.09*	0.01	.14**	.14**	-.12**	-.09*	.15**	.08*	-.11**	-0.04

Study 2 Correlation Table (cont.)

	11	12	13	14	15	16	17	18	19	20	21
1. Meaningfulness Needs											
2. Meaningfulness Supplies											
3. Boredom (13-item)											
4. Boredom (5-item)											
5. Absorption											
6. Positive Affect											
7. Negative Affect											
8. Trait Boredom											
9. Proactive Personality											
10. Perceived Org. Support											
11. Frustration	<i>0.90</i>										
12. Cynicism	<i>.70**</i>	<i>0.95</i>									
13. Turnover Intentions	<i>.68**</i>	<i>.70**</i>	<i>0.98</i>								
14. Citizenship Behavior	<i>-.34**</i>	<i>-.31**</i>	<i>-.36**</i>	<i>0.94</i>							
15. Skill Building	<i>-.33**</i>	<i>-.31**</i>	<i>-.36**</i>	<i>.68**</i>	<i>0.96</i>						
16. Innovative Behavior	<i>-.31**</i>	<i>-.28**</i>	<i>-.27**</i>	<i>.70**</i>	<i>.78**</i>	<i>0.98</i>					
17. Citizenship Behavior T2	<i>-.27**</i>	<i>-.20**</i>	<i>-.31**</i>	<i>.66**</i>	<i>.49**</i>	<i>.55**</i>	<i>0.94</i>				
18. Skill Building T2	<i>-.27**</i>	<i>-.24**</i>	<i>-.32**</i>	<i>.47**</i>	<i>.63**</i>	<i>.58**</i>	<i>.68**</i>	<i>0.96</i>			
19. Innovative Behavior T2	<i>-.27**</i>	<i>-.17**</i>	<i>-.25**</i>	<i>.51**</i>	<i>.55**</i>	<i>.72**</i>	<i>.71**</i>	<i>.78**</i>	<i>0.98</i>		
20. Age	<i>-.11**</i>	<i>-0.05</i>	<i>-.14**</i>	<i>.09*</i>	<i>0.06</i>	<i>0.07</i>	<i>.13**</i>	<i>0.01</i>	<i>.08*</i>	--	
21. Gender (0=M, 1=F)	<i>.14**</i>	<i>.09*</i>	<i>.08*</i>	<i>0.03</i>	<i>0.03</i>	<i>-0.06</i>	<i>-0.06</i>	<i>-0.02</i>	<i>-0.08</i>	<i>-.16**</i>	--

Note: N=586-648

**Table 9***Study 2 CFA Goodness of Fit Statistics*

Model	$\chi^2$	<i>df</i>	RMSEA	CFI
Model 1: 11 Factor	6785.74*	1375	.08 (.08, .08)	.88
Model 2: 10 Factor (Needs + Supplies Collapsed)	7564.50*	1385	.08 (.08, .09)	.86
Model 3: 11 Factor (Needs + Supplies Correlated)	6651.81*	1372	.08 (.08, .09)	.88
Model 4: 11 Factor (5-item Boredom)	2737.25*	976	.05 (.05, .06)	.95
Model 5: 10 Factor (Frustration + Cynicism Collapsed)	3601.76*	986	.06 (.06, .07)	.93
Model 6: 9 Factor (Behavioral DVs Collapsed)	5150.81*	995	.08 (.08, .08)	.88

*Note:* \*Indicates  $p < .001$ ;  $N = 649$

Model 1 has all hypothesized model variables (Meaningfulness Needed and Supplied, Boredom (13-item), Proactive Personality, Perceived Organizational Support, Frustration, Cynicism, Turnover Intentions, Organizational Citizenship Behavior, Skill Building, Innovative Behavior). Model 2 was modified Model 1 with Meaningfulness Needed and Supplied collapsed into a single factor. Model 3 was modified Model 1 allowed corresponding Meaningfulness Needed and Supplied items to correlate (Cole, et al., 2007). Model 4 was modified Model 3 using the 5-item boredom measure. Model 5 was modified Model 4 with frustration and cynicism collapsed. Model 6 was modified Model 4 collapsed the behavioral dependent variables (citizenship behavior, innovative behavior, skill building).

**Table 10***Study 2 Standardized Loadings for CFA Test Hypothesized Model 4*

Variable	Number of	Standardized Lambda Loadings		
	Items	MIN	MAX	AVG
Boredom	5	.67	.85	.78
Cynicism	5	.84	.91	.88
Frustration	3	.76	.94	.88
Innovative Behavior	9	.86	.93	.90
Meaningfulness Needed	3	.75	.90	.85
Meaningfulness Supplied	3	.77	.94	.88
Org. Citizenship Behavior	3	.85	.98	.92
Proactive Personality	4	.67	.91	.80
Perceived Org. Support	5	.88	.94	.92
Skill Building	3	.93	.98	.95
Turnover Intentions	4	.93	.98	.95

*Note:* N = 649; Residuals of corresponding items for Needs & Supplies items allowed to correlate (Cole, et al., 2007).

**Table 11***Results of Polynomial Regression Analysis for Meaningfulness Needs-Supplies Fit*

	$b_0$	$b_1 S$	$b_2 N$	$b_3 S^2$	$b_4 SN$	$b_5 N^2$	$R^2$
Boredom	3.24*** (.09)	-.44*** (.09)	.14 (.10)	.05 (.03)	-.12* (.05)	.002 (.04)	.28***
Positive Affect	3.86*** (.08)	.27*** (.08)	.23** (.09)	-.01 (.03)	.11* (.04)	-.03 (.04)	.32***
Absorption	3.82*** (.08)	.41*** (.08)	.14 (.09)	-.07** (.02)	.09* (.04)	-.01 (.04)	.34***

Note: N = 642, \*p < .05, p < .01 \*\*, \*\*\*p < .001; S = Meaningfulness Supplied, N = Meaningfulness Needed; unstandardized regression coefficients presented, standard error in (parentheses).

**Table 12***Response Surface Results*

	Fit		Misfit	
	Slope	Curvature	Slope	Curvature
Boredom	-.30***	-.06*	-.58**	.18
Positive Affect	.50***	.07*	.04	-.15
Absorption	.55**	.01	.28	-.17*

*Note:* Slope and curvature along the fit line was calculated by  $(b_1+b_2)$  and  $(b_3+b_4+b_5)$ , respectively, and slope and curvature along the misfit line was calculated by  $(b_1-b_2)$  and  $(b_3-b_4+b_5)$ , respectively.

N = 642, \*p < .05, \*\*p < .01, \*\*\*p < .001

**Table 13***Boredom Moderated Mediated Model Results*

DV	Path Estimates							Second Stage Moderation <sup>†</sup>				Avg IE of Mean. [99% BC CI]	Bored. <i>r</i> <sup>2</sup>	DV <i>r</i> <sup>2</sup>
	Mean. to Bored.	Mean. to DV	Bored.	POS	Bx POS	ProPers	Bx ProPers	POS		Proactive Pers.				
								-1SD	+1SD	-1SD	+1SD			
OCB	.53***	.21***	-.09	.49***	-.18	.07	.22	--	--	--	--	-.06 [-.30, .17]	.28***	.35***
Skill B.	.53***	.29***	-.11	.41***	-.18	.09	.23	--	--	--	--	-.07 [-.33, .18]	.28***	.33***
Inn. B.	.53***	.24***	.02	.44***	-.17	.36***	.16	--	--	--	--	.02 [-.26, .30]	.28***	.46***
Cynicism	.53***	.11**	.44***	-.44***	-.19*	.11*	.03	.56 [.15,.95]	.39 [.08,.70]	--	--	.36 [.08, .64]	.28***	.57***
Frustration	.53***	.09**	.70***	-.12	-.30***	.00	.07	.90 [.54,1.26]	.63 [.33,.92]	--	--	.60 [.34, .90]	.28***	.63***
TOI	.53***	.20***	.24	-.25***	-.23*	-.02	.40**	.37 [-.12,.84]	.16 [-.22,.53]	.15 [-.34,.62]	.38 [.01,.73]	.16 [-.09,.42]	.28***	.37***

*Note:* Mean. = Meaningfulness Fit Block, Bored=boredom, ProPers= Proactive Personality, POS= Perceived Organizational Support; 99% Bias corrected confidence interval provided in brackets [lower limit, upper limit]; Standardized coefficients presented in table.

<sup>†</sup>Second Stage Moderation results are the change in the indirect effect of meaningfulness fit on the DV through boredom at low and high values of the moderator.



**Table 14***Positive Affect Moderated Mediated Model Results*

DV	Path Estimates							Second Stage Moderation <sup>†</sup>				Avg IE of Mean. [99% BC CI]	PA <i>r</i> <sup>2</sup>	DV <i>r</i> <sup>2</sup>
	Mean. to PA	Mean. to DV	PA	POS	PAx POS	ProPers	PAx ProPers	POS		Proactive Pers.				
								-1SD	+1SD	-1SD	+1SD			
OCB	.56***	.17**	.26*	.39**	-.08	.22	-.10	--	--	--	--	.18 [-.05, .41]	.32***	.33**
Skill B.	.56***	.24***	.29*	.32**	-.12	.20	-.03	--	--	--	--	.20 [-.06, .47]	.32***	.33***
Inn. B.	.56***	.20***	.19	.44***	-.15	.38**	.08	--	--	--	--	.14 [-.14, .42]	.32***	.44***
Cynicism	.56***	.09**	-.19	-.63***	-.03	-.03	.26	--	--	--	--	-.16 [-.42, .12]	.32***	.57***
Frustration	.56***	.10**	-.19*	-.66***	.44***	.17	-.28	-.42 [-.87, .07]	-.15 [-.55, .27]	--	--	-.19 [-.47, .10]	.32***	.67***
TOI	.56***	.24***	-.10	-.60***	-.24	.28	-.25	--	--	--	--	-.08 [-.32, .16]	.32***	.50***

*Note:* Mean. = Meaningfulness Fit Block, PA= Positive Affect, ProPers= Proactive Personality, POS= Perceived Organizational Support; 99% Bias corrected confidence interval provided in brackets [lower limit, upper limit]; Standardized coefficients presented in table

<sup>†</sup>Second Stage Moderation results are the change in the indirect effect of meaningfulness fit on the DV through boredom at low and high values of the moderator.

**Table 15***Absorption Moderated Mediated Model Results*

DV	Path Estimates							Second Stage Moderation <sup>†</sup>				Avg IE of Mean. [99% BC CI]	Ab $r^2$	DV $r^2$
	Mean. to Ab.	Mean. to DV	Ab.	POS	Abx POS	ProPers	Abx ProPers	POS		Proactive Pers.				
								-1SD	+1SD	-1SD	+1SD			
OCB	.58***	.16***	.24	.18	.22	.22	-.13	--	--	--	--	.16 [-.09,.41]	.34***	.25***
Skill B.	.58***	.21***	.36***	.11	.18	.33**	-.33	--	--	--	--	.28 [.00,.55]	.34***	.42***
Inn. B.	.58***	.16***	.29**	.14	.17	.51***	-.28	--	--	--	--	.25 [-.05,.54]	.34***	.54***
Cynicism	.58***	.09**	-.24**	-.71***	.36***	.14	-.08	-.48 [-.89,.01]	-.25 [-.56,.13]	--	--	-.26 [-.54,.05]	.34***	.72***
Frustration	.58***	.10**	-.32***	-.59***	.34*	.08	-.09	-.54 [-.94,-.08]	-.35 [-.72,.05]	--	--	-.30 [-.58,-.02]	.34***	.63***
TOI	.58***	.22***	-.15	-.61***	.30*	.33***	-.32*	-.31 [-.74,.18]	-.13 [-.50,.25]	-.14 [-.60,.34]	-.30 [-.64,.07]	-.12 [-.34,.11]	.34***	.47***

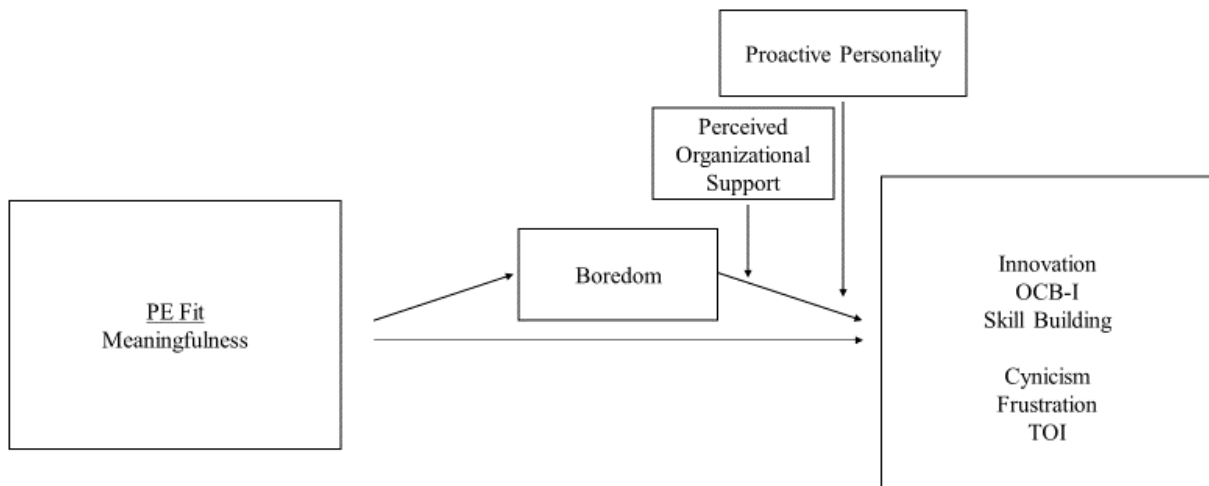
*Note:* Mean. = Meaningfulness Fit Block, Ab= Absorption, ProPers= Proactive Personality, POS= Perceived Organizational Support; 99% Bias corrected confidence interval provided in brackets [lower limit, upper limit]; Standardized coefficients presented in table

<sup>†</sup>Second Stage Moderation results are the change in the indirect effect of meaningfulness fit on the DV through boredom at low and high values of the moderator.

## FIGURES

**Figure 1**

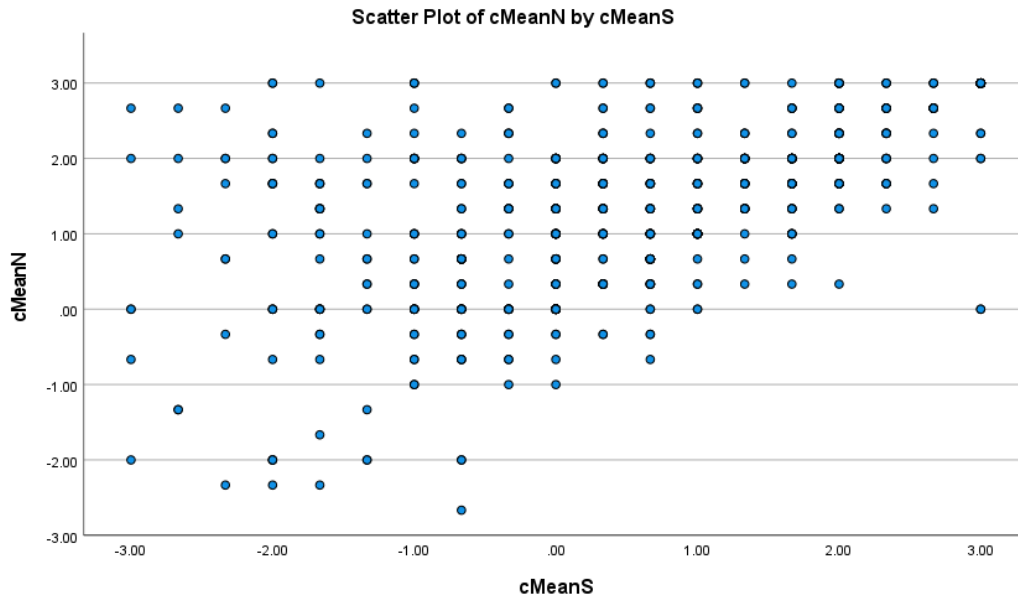
*Hypothesized Model*



*Note:* Partial mediation is hypothesized. Model is presented with omitted direct effects from meaningfulness to dependent variables for clarity.

**Figure 2**

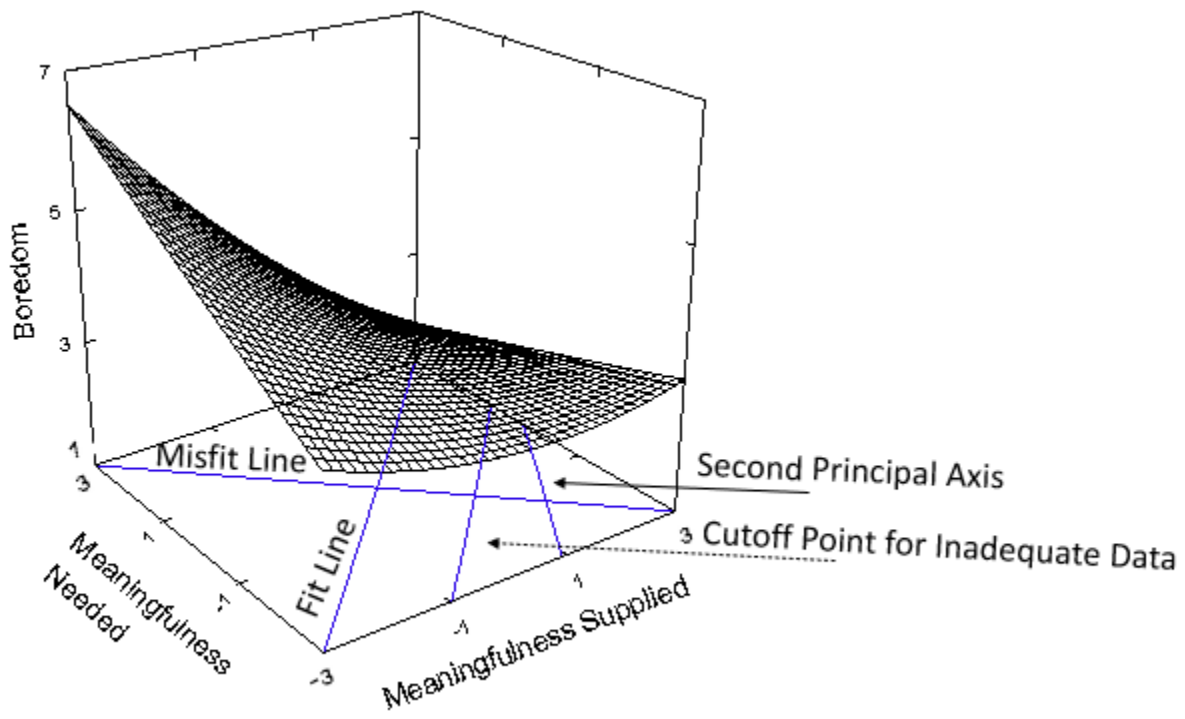
*Scatter Plot of Meaningfulness Needed and Supplied*



*Note:* Meaningfulness Supplied and Needed are centered at the midpoint of the scale.

**Figure 3**

*Polynomial Regression and Response Surface Results*



*Note:* Meaningfulness Supplied and Needed are centered at the midpoint of the scale.

## APPENDICES

### APPENDIX A. Existing Boredom Measurement Scales

**Fisher (1998)**

*While working on the task, to what extent did you feel.....?*

- Alert
- Time was dragging
- bored
- restless
- fascinated by the task
- irritable
- unable to concentrate
- focused on the task
- mind was wandering
- frustrated
- enjoying the task
- attentive
- distracted
- interested in the task
- day-dreaming
- involved in the task
- off in another world
- How frustrating was it working on this task?
- To what extent did your mind wander to other topics while working on this task?
- how hard was it to keep your attention on this task?
- How boring or interesting was the task?
- During the work period, how often did you think about other things outside of this experiment?

**van Tilburg & Igou (2012)**

- 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 feel like doing something more purposeful?
- 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 want to do something more meaningful?
- When you focus on your feelings at the moment, how much does the feeling make you want to be challenged?

**Fahlman et al. (2013)**

- I am wasting time that would be better spent on something else.
- I feel like I'm sitting around waiting for something to happen.
- I am stuck in a situation that I feel is irrelevant.
- I seem to be forced to do things that have no value to me.
- Everything seems repetitive and routine to me.
- I want something to happen but I'm not sure what.
- I wish I was doing something more exciting.
- I am indecisive or unsure of what to do next
- I want to do something fun, but nothing appeals to me.
- Everything seems to be irritating me right now.
- I feel agitated.
- I am more moody than usual.
- I feel tense.
- I am annoyed with the people around me.
- I am impatient right now.
- I am lonely.
- I feel empty.
- I feel cut off from the rest of the world.
- I feel depressed.
- It seems like there's no one around for me to talk to.
- It is difficult to focus my attention.
- I am easily distracted.
- My mind is wandering.
- My attention span is shorter than usual.
- Time is moving very slowly.
- Time is dragging on

**Reijseger et al. (2013)**

- At work, time goes by very slowly
- I feel bored at my job
- During work time I daydream
- It seems as if my working day never ends
- I tend to do other things during my work
- At my work, there is not so much to do

**Baratta & Spence (2018)**

- I want to do something interesting but don't know what to do.
- I want to do something but I don't know what.
- I want something to happen but I'm not sure what.
- I feel drowsy.
- I feel fatigued.
- I am lacking energy.
- I feel sluggish.
- It is taking a lot of effort to maintain my attention.
- I am having difficulty maintaining my attention.
- It is difficult to focus my attention.

## APPENDIX B. Boredom Items Identified in Study 1a and Used in Studies 1b, 1c, and 2

Definition: *Boredom is the unpleasant feeling of longing to be occupied* (Zabinski, present study)

Prompt: I feel like... (1:7 Not at all, A moderate amount, A great deal)

Subdimension	Item
Global Boredom	<b>I feel bored</b> <sup>*†</sup>
High Arousal	I feel like doing something completely different I wish I was doing something more exciting <sup>*†</sup> I feel restless I seem to be forced to do things that have no value to me I am stuck in a situation that I feel is irrelevant I am wasting time that would be better spent on something else <b>I want to do something, but I don't know what</b> <sup>*†</sup> I feel like I'm sitting around waiting for something to happen <sup>*†</sup>
Inattention	I am having difficulty maintaining my attention <sup>*†</sup> <b>It is difficult to focus my attention</b> <sup>*†</sup> My mind is wandering <sup>*†</sup> During work time I daydream <sup>*</sup>
Low Arousal	<b>I am lacking energy</b> <sup>*†</sup> I feel sluggish <sup>*†</sup> I feel drowsy <sup>*</sup> I feel fatigued <sup>*†</sup>
Time Drag	Time is dragging on <sup>*†</sup> <b>Time is moving very slowly</b> <sup>*†</sup> At work, time goes by very slowly <sup>*†</sup> It seems as if my working day never ends

Note: All items used in Study 1b. <sup>\*</sup>kept for Study 1c, <sup>†</sup>kept for Study 2, **bold** = 5-item boredom measure



## APPENDIX C. Measurement Scales in Studies 1c and 2

All variables measured on (1:7) scale

### **Absorption** (Schaufeli, et al., 2006)

- Time flies when I'm working
- When I am working, I forget everything else around me
- I feel happy when I am working intensely
- I am immersed in my work
- I get carried away when I'm working

### **Apathy** (Frijda, 1987)

- There is nothing that you feel like doing, nothing elicits your interest
- You do not want to have anything to do with anything
- You do not care any more about anything

### **Citizenship Behavior** (Lambert, et al., 2019)

- Contribute in extra ways beyond what is required by the job
- Do extra things on the job that help out around here
- Volunteer for things that are not required

### **Cynicism** (Johnson & O'Leary, 2003)

- I believe that my organization never does what it says it will do
- When my organization says it's going to do something, I know that it won't really happen
- My organization's policies, goals, and practices seem to have little in common
- I see little similarity between what my organization says it will do and what it actually does
- My organization expects one thing of its employees, but rewards another

### **Depletion** (Lanaj, et al., 2019)

- I feel drained right now
- Right now, my mental energy is running low
- Right now, I feel like my willpower is gone
- My mind feels unfocused right now
- Right now, it would take a lot of effort for me to concentrate on something

### **Frustration** (Gelbrich, 2010)

- I feel frustrated
- I feel disturbed
- I feel annoyed

### **Innovation** (Janssen, 2001)

- creating new ideas for improvements
- searching out new working methods, techniques, or instruments
- generating original solutions to problems
- mobilizing support for innovative ideas
- acquiring approval for innovative ideas
- making important organizational members enthusiastic for innovative ideas
- transforming innovative ideas into useful applications
- introducing innovative ideas into the work environment in a systemic way
- evaluating the utility of innovate ideas

### **Emotional Exhaustion** (Maslach, et al., 1996)

- Feel emotionally drained
- Tired to face another day
- Feel burned out

**Meaningfulness Needs/ Supplies** (Vogel, et al., 2020) Prompt: (Needs) How much is the right amount for you? / (Supplies) How much is actually present in your job?

- Doing important work
- Having personally meaningful job activities
- Work that is meaningful

### **PANAS** (Thompson, 2007)

- Upset
- Hostile
- Alert
- Ashamed
- Inspired
- Nervous
- Determined
- Attentive
- Active
- Afraid

**Perceived Organizational Support** (Eisenberger, et al., 2001; *reverse coded item dropped*)

- My organization takes pride in my accomplishments
- My organization really cares about my well-being
- My organization values my contributions to its well-being
- My organization strongly considers my goals and values
- My organization is willing to help me if I need a special favor

**Proactive Personality** (Bateman & Crant, 1993; *shortened*)

- If I see something I don't like, I fix it.
- I excel at identifying opportunities.
- I am always looking for better ways to do things.
- I can spot a good opportunity long before others can.

**Skill Building** (Lambert, et al., 2019)

- Build skills for this particular job
- Learn things that help you do your job
- Develop abilities to perform your job

**Task Significance** (Morgeson & Humphrey 2006)

- The results of my work are likely to significantly affect the lives of other people
- The job is very significant and important in the broader scheme of things
- The job has a larger impact on people outside of the organization
- The work performed on the job has a significant impact on people outside of the organization

**Trait Boredom** (Struk, et al., 2017)

- I often find myself at “loose ends,” not knowing what to do.
- I find it hard to entertain myself.
- Many things I have to do are repetitive and monotonous.
- It takes more stimulation to get me going than most people.
- I don't feel motivated by most things that I do.
- In most situations, it is hard for me to find something to do or see to keep me interested.
- Much of the time, I just sit around doing nothing.
- Unless I am doing something exciting, even dangerous, I feel half-dead and dull.

**Turnover Intentions** (Kelloway et al., 1999)

- I am thinking about leaving this organization
- I am planning to look for a new job
- I intend to ask people about new job opportunities
- I don't plan to be in this organization much longer

## APPENDIX D. S2 Triple Interaction Predictions & Results

### *Triple Interaction Prediction*

In the body of the manuscript, I hypothesize about proactive personality and POS acting as second stage moderators between boredom and the dependent variables independently. Here, I theorize about the triple interaction term between boredom, proactive personality, perceived organizational support, and the dependent variables (innovation, OCB, skill building, cynicism, frustration, TOI).

It is reasonable to suggest that as boredom increases, employees who are inclined to preemptively pursue positive outlets (i.e., high proactive personality) and feel supported by their organization (i.e., high POS) are more likely to engage in positive behaviors that benefit the organization in response to boredom compared to employees who are less inclined to preemptively pursue positive outlets (i.e., low proactive personality) and feel less supported by their organization. As boredom increases, those employees in the latter category are more likely to experience negative attitudes, feeling cynical towards the organization, frustrated in their position, or even consider leaving the organization.

*Prediction 1a-g:* Proactive personality and POS will jointly moderate the relationship between boredom and work outcomes so that when proactive personality and POS are both high, the relationship between boredom and work behaviors— (a) innovation, (b) OCBI-I, (c) skill building—will be stronger than when proactive personality and POS are low. Similarly, when proactive personality and POS are both high, the relationship between boredom and attitudinal outcomes— (d) cynicism, (e) frustration, and (f) turnover intentions—will be weaker than when proactive personality and POS are both low.

When an employee has a strong inclination to preemptively pursue positive outlets (i.e., high proactive personality), but does not feel supported by their organization to do so (i.e., low POS), they likely feel a sense of disconnect between themselves and their organization. In line with person-organization theories (Kristof, 1996; Schneider, 1987; Schneider, Goldstein, & Smith, 1995), this dysphoria perhaps leads to internal conflict where, as boredom increases, the employee wants to engage in behaviors such as innovation, assisting coworkers (i.e., OCB), or skill-building, but simultaneously feels cynical, frustrated, and may even consider leaving the organization.

In contrast, when an employee has a weak inclination to preemptively pursue positive outlets (i.e., low proactive personality) and does feel supported by their organization (i.e., high POS), they likely feel content with their role in the organization. Therefore, as boredom increases, these employees are less likely to engage in positive behaviors or experience negative attitudes, than their counterparts with strong proactive personalities and low POS.

*Prediction 2a-g:* Proactive personality and POS will jointly moderate the relationship between boredom and work outcomes so that when proactive personality is high, but POS is low, the relationship between boredom and work behaviors— (a) innovation, (b) OCBI-I, (c) skill building—will be stronger than when proactive personality is low, and POS is high. Similarly, when proactive personality is high, but POS is low, the relationship between boredom and attitudinal outcomes— (d) cynicism, (e) frustration, and (f) turnover intentions—will also be stronger than when proactive personality is low, and POS is high.

## ***Results & Discussion***

I built the triple interaction based upon the results from Hypotheses 4 and 5 where proactive personality and perceived organizational support each significantly moderated the relationship between boredom and work outcomes independently. With this condition, I only tested a triple interaction for turnover intentions as the dependent variable. The triple interaction was nonsignificant ( $b_{\text{tripleinteraction}} = .002$ ,  $p = .929$ ), see Table i.

**Table i**

*Triple Interaction Moderation Regression Results for Turnover Intentions*

	TOI
Intercept	2.76***
Boredom	0.49***
Proactive Pers.	0.29***
POS	-0.50***
ProPersxBoredom	0.11**
POSxBoredom	-0.07**
POSxProPers	0.02
Triple Interaction	0.002
<i>r-square</i>	0.49***

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