



## King's Research Portal

DOI:

[10.1177/10422587211006431](https://doi.org/10.1177/10422587211006431)

*Document Version*

Peer reviewed version

[Link to publication record in King's Research Portal](#)

*Citation for published version (APA):*

Williamson, A. J., Gish, J. J., & Stephan, U. (2021). Let's focus on solutions to entrepreneurial ill-being: Recovery interventions to enhance entrepreneurial well-being. *Entrepreneurship: Theory and Practice*, 45(6), 1307-1338. <https://doi.org/10.1177/10422587211006431>

### **Citing this paper**

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

### **General rights**

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

### **Take down policy**

If you believe that this document breaches copyright please contact [librarypure@kcl.ac.uk](mailto:librarypure@kcl.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.

**LET'S FOCUS ON SOLUTIONS TO ENTREPRENEURIAL ILL-BEING:  
RECOVERY INTERVENTIONS TO ENHANCE ENTREPRENEURIAL WELL-  
BEING**

*Accepted for publication in [Entrepreneurship Theory and Practice](#)*

*--this is a preprint draft--*

**Amanda Jasmine Williamson**

Lecturer in Innovation and Strategy  
University of Waikato  
Hillcrest Road, Hamilton 3240  
New Zealand  
Amanda.Williamson@waikato.ac.uk

**J. Jeffrey Gish**

Assistant Professor of Management  
University of Central Florida  
College of Business Administration  
12744 Pegasus Dr., Orlando, FL 32816  
jgish@ucf.edu

**Ute Stephan**

Professor of Entrepreneurship  
King's College London  
King's Business School  
Bush House, 30 Aldwych, London WC2B 4BG  
United Kingdom  
Ute.Stephan@kcl.ac.uk  
and  
Technische Universität Dresden  
Work & Organisational Psychology  
Zellescher Weg 17, 01062 Dresden, Germany

**Please cite as:**

Williamson, A. J., Gish, J. J., & Stephan, U. (in-press). Let's focus on solutions to entrepreneurial ill-being: Recovery interventions to enhance entrepreneurial well-being. *Entrepreneurship Theory and Practice*.

**Acknowledgments:**

We are grateful to Prof. Johan Wiklund and the anonymous reviewers, who helped shape this editorial throughout the peer-review process. Our thanks also go to Andreana Drencheva, and John G. Oetzel for their input on some of the ideas in this manuscript. Mistakes are our own.

## **Let's focus on solutions to entrepreneurial ill-being: Recovery interventions to enhance entrepreneurial well-being**

Entrepreneurship is uniquely stressful. Entrepreneurs often cannot avoid entrepreneurial stressors (e.g., uncertainty, workload, resource constraints) and these stressors can deter natural recovery activities (e.g., detachment and sleep). Yet, entrepreneurs may be able to lessen the negative impact of stress on their well-being, health, and productivity by engaging in recovery. In this editorial, we outline how scholars can employ recovery interventions to ameliorate some of entrepreneurship's ill effects and support entrepreneurs' health, well-being, and productivity. We aim to move the focus of scholarly inquiry from *documenting* the health and well-being challenges of entrepreneurs, towards identifying and implementing *solutions* to support entrepreneurs.

### **1. Introduction**

*“Along with my colleagues, I launched a store on Shopify. A few nights before I removed the password to unleash my business on the world, I caught myself awake at 3:30 AM, still writing product descriptions. I couldn't remember the last meal I ate. (Did I even drink water today?) My back ached, my eyes were strained, and I had skipped yoga and missed six texts from my sister.... I realized how easy it is, in the thick of nurturing a business, to forget to nurture yourself.”* (Dayna Winter, 2020, para. 2)

Entrepreneurship scholars have rapidly amassed an understanding of entrepreneurial well-being (Stephan, 2018; Wiklund, Nikolaev, Shir, Foo & Bradley, 2019), defined as an entrepreneur's “experience of satisfaction, positive affect, infrequent negative affect, and psychological functioning in relation to developing, starting, growing, and running an entrepreneurial venture” (Wiklund, Nikolaev, et al., 2019, p. 579; also Shir, 2015). In this editorial, we argue that the next frontier of research on entrepreneurial well-being is to apply our knowledge to devise interventions which can make a difference in the lives of entrepreneurs and enhance their well-being. We draw attention to entrepreneurial recovery as a focus for intervention.

Insights thus far suggest that being an entrepreneur can be personally and professionally enriching. More so than most careers, acting as “one's own boss” offers great potential to engage in self-determined and meaningful work (e.g., Shir, 2015; Stephan, 2018; Wiklund, Nikolaev, Shir, Foo, & Bradley, 2019). Despite these benefits, entrepreneurship can also take

a psychological and physiological toll on individuals. Entrepreneurship involves taking risks by developing, starting, growing and running an independent organization, encompassing both growth-oriented and ‘everyday’ instantiations of self-employment (Welter, Baker, Audretsch, & Gartner, 2017). This form of work can be intensely stressful (Fernet, Torrès, Austin, & St-Pierre, 2016; Wincent & Örtqvist, 2009), it often entails great uncertainty (Rauch, Fink, & Hatak, 2018; Wincent, Örtqvist, & Drnovsek, 2008), and high work intensity in a resource-constrained environment (Rauch et al., 2018; Stephan, 2018). These stressors undermine entrepreneurial well-being and drive entrepreneurial ill-being. Ill-being encompasses states of distress (high negative affect, low positive affect, and often also low satisfaction) or, more severely, states of impaired daily functioning (see Stephan, 2018). Indeed, research using physiological biomarkers of stress identifies greater ‘wear and tear’ of the inflammatory, metabolic, and cardiovascular systems among entrepreneurs (Cardon & Patel, 2015; Patel, Wolfe, & Williams, 2019).

Entrepreneurial stressors do not *need* to cause ill-being. The physiological and psychological resources expended in entrepreneurship can be restored if an individual disengages from stress through recovery (e.g., Sonnentag, 2018). Through restoring resources, recovery diminishes stress’s harmful impact on the body and mind. Recovery occurs during activities that provoke the reappraisal of, or disconnection from, stress (e.g., cognitive behavioral therapy and time in nature). Moreover, engaging in effective recovery activities can not only reduce the costs of entrepreneurship on an individual’s well-being, but also boost productivity (e.g., through enhancing innovative behavior: Williamson, Battisti, Leatherbee, & Gish, 2019). This, however, raises two questions: What are effective recovery activities for entrepreneurs, and how can we implement them?

Although research documents recovery from work stress for employees (e.g., Sonnentag, Venz, & Casper, 2017), the context of entrepreneurship is unique in several

respects—from highly autonomous and meaningful work to the longest working hours of any occupation—which calls for dedicated research into entrepreneurial recovery. Entrepreneurship tends to erode boundaries between work and non-work experiences like few other occupations and makes it particularly difficult for entrepreneurs to detach mentally from the stressful aspects of their work and to find time for engaging in recovery activities. Entrepreneurs experience high levels of engagement with their work, because of high degrees of autonomy, meaningfulness, and personal identification associated with an entrepreneurial career (Shir, Nikolaev, & Wincent, 2019; Stephan et al., 2020; van Gelderen & Jansen, 2006). Entrepreneurs create their own work and venture, which wields inflated leverage on their career's meaningfulness compared to wage employees (Baron, 2010; Stephan et al., 2020). Consequently, the venture is central to an entrepreneur's identity (Cardon, Wincent, Singh, & Drnovsek, 2009). This strong personal identification with the venture, coupled with greater autonomy and meaningfulness, makes it difficult for entrepreneurs to distance themselves from entrepreneurial activities. They typically end up working very long hours with work easily extending into evenings and weekends (Bae, 2017; Grosch, Caruso, Rosa, & Sauter, 2006). This can leave them with little time and energy to engage in activities and experiences that allow them to recuperate and recover from work stress.

This points to a fundamental tension in entrepreneurship, as illustrated in Figure 1. On one hand, detaching from work stress is important for rebounding from entrepreneurial stressors, preserving entrepreneurial well-being, and ultimately improving entrepreneurial performance (e.g., creative problem solving: Weinberger, Wach, Stephan, & Wegge, 2018). On the other hand, it is difficult to detach and recover when work is intensely demanding, and boundaries between work and life are eroded (Sonnetag, 2018). This is commonly the case in entrepreneurship (Wolfe & Patel, 2019). Since effective recovery interventions ameliorate impediments to recovery, they hold great promise for resolving this tension. The term

“intervention” is defined as “coordinated sets of activities designed to change specified behavior patterns” (Michie, van Stralen, & West, 2011, p. 6). Interventions aimed to influence behavior around recovery (such as behavior modification around sleep, mindfulness practices, exercise, and time in nature) can improve how individuals detach and rebound from stress, which can help them (re-)build resources under such conditions. Without recovery interventions, entrepreneurs are less likely to flourish when encountering the inevitable stressors associated with entrepreneurship.

[Figure 1 About Here]

This editorial provides guidance on how entrepreneurship scholars may start investigating and implementing recovery interventions for entrepreneurs, to offer solutions to the effects of stress on entrepreneurial ill-being and help entrepreneurs to thrive. Entrepreneurial well-being research has documented the ill-being effects of entrepreneurship through observational and correlational research design (Stephan, 2018). Even though this work has made great progress, it leaves both researchers and practitioners uncertain about how they may actively ameliorate ill-being, while simultaneously retaining the beneficial outcomes from stress. Entrepreneurial careers—with clear tensions between beneficial psychological resources and stifled recovery efforts—offer a unique context to advance theory on how individuals recover vital resources for work. This editorial and follow-on research can employ entrepreneurial contexts to make such theoretical advances. For instance, entrepreneurial contexts seem uniquely suited to uncover new insight on how to navigate the recovery paradox, i.e., that recovery is most elusive when it is needed most (Sonnetag, 2018), and learn more about how recovery relates to productivity (e.g., Wendsche & Lohmann-Haislah, 2017). Focusing on interventions presents an opportunity to extend our knowledge of entrepreneurial well- and ill-being whilst aiding entrepreneurs. We outline how entrepreneurship researchers can help implement solutions to address entrepreneurial ill-being through co-creating recovery

interventions with entrepreneurs and leveraging experimental designs to conduct practically and scientifically impactful research (Anderson, Wennberg, & McMullen, 2019; Stevenson, Josefy, McMullen, & Shepherd, 2020; Williams, Wood, Mitchell, & Urbig, 2019).

Next, we define recovery and then outline the specific need for recovery in the context of entrepreneurial work. After a brief overview of past research on recovery interventions, we introduce a taxonomy of recovery interventions specifically suited to support entrepreneurs—what we call the three Rs: Respite, Reappraisal, and Regimen. In the final section, we provide guidance on how to design and implement recovery interventions in a manner that can advance theory while simultaneously delivering practically relevant research (Wiklund, Wright, & Zahra, 2019) capable of enhancing well-being and minimizing ill-being among entrepreneurs. Specifically, we highlight that heterogeneity exists among entrepreneurs and thus encourage scholars to co-create interventions to enhance their effectiveness in different contexts. Our work then draws on best-practices in health research to give direction on employing randomized controlled trials in entrepreneurship research, which enable knowledge-building claims of causal inference. By highlighting issues with recovery and promising interventions, we hope to move the focus of scholarly inquiry from *documenting* the well-being of entrepreneurs, towards identifying and implementing *solutions* to help people thrive in entrepreneurship.

## 2. What recovery does

Recovery describes a process of disengagement from work and recuperation from stress, which allows for the restoration of physiological and psychological resources (Sonnetag, 2018). Stressors place demands upon the body, requiring psychological and physiological resource mobilization. Resources can be measured by an individual's feelings of subjective vitality (Ryan & Frederick, 1997). More specifically, a person's vitality is composed of higher energy, more feelings of vigor, greater activated positive affect, and more calm

energy (Ryan & Deci, 2008). Feelings of vitality, in turn, are associated with short-term gains in workplace creativity (Kark & Carmeli, 2009) and performance (Shirom, 2011), along with longer-term considerations such as increased lifespans (Chida & Steptoe, 2008), and greater durability when faced with diseases (Muraven, Gagné, & Rosman, 2008) or personal struggles (Thayer, 1996). Similar to a rechargeable battery, the body's energetic resources, composed of feelings of vitality, are limited and require restoration. Hence we cannot expend effort endlessly and instead need to make time to recover resources (Meijman & Mulder, 1998).

Recovery is important for two reasons. First, recovery helps to restore resources that are vital for purposive action. More resources help individuals deal with workplace demands (Ryan & Deci, 2008). Second, without time for recovery, the physiological impact of stress accumulates and can be harmful to the entrepreneur over time. The accumulated impact of stress is visible in allostatic load, defined as prolonged organ and tissue exposure to stressors that engenders a greater propensity for disease (McEwen, 1993). "Allostatic load is the cost of chronic exposure to fluctuating or heightened neural or neuroendocrine response resulting from repeated or chronic environmental challenge that an individual reacts to as being particularly stressful" (McEwen, 1993, p. 2093). Recovery experiences help prevent the build-up of allostatic load and allow the individual to cope with stress and maintain well-being and productivity, despite persistent exposure to stressors (Patel et al., 2019). Entrepreneurs can recover resources by psychologically detaching from work (Taris, Geurts, Schaufeli, Blonk, & Lagerveld, 2008; Wach, Stephan, Weinberger, & Wegge, 2020), for instance by engaging in quality sleep (Gish, Wagner, Grégoire, & Barnes, 2019; Williamson et al., 2019), practicing mindfulness (Murnieks et al., 2020) and, in some circumstances, through physical exercise (Patzelt & Shepherd, 2011). These recovery experiences influence downstream activities germane to entrepreneurial pursuits. These activities include, but are not limited to, greater

control over attention and impulsivity, improved creativity, and lower psychological distress (Gunia, Gish, & Mensmann, 2021; Weinberger et al., 2018; Wolfe & Patel, 2019).

However, in intensely stressful career contexts, when recovery is most needed, it can become elusive. Those who seemingly need to recover from stress the most, such as individuals working in high-stress environments, often find it especially difficult to make time for recovery by granting themselves breaks during work or by disengaging from work-related problems after leaving the workplace (Sonnetag, 2018). Instead, they often either carry on working long hours or carry work-related problems with them outside normal working hours. Sonnetag (2018) explains that stressful work, the type that requires recovery in order to facilitate sustained performance, can be so demanding that it simultaneously crowds out opportunities for recovery. She refers to this tension as the *recovery paradox*. Entrepreneurship is arguably a context that intensifies the recovery paradox. As we will discuss next, the unpredictability and uncertainty associated with entrepreneurship intensify the potential for stress (Rauch et al., 2018), while the autonomy, meaning, and personal identification embedded in entrepreneurial work make it even harder to disconnect from work.

### 3. Why we need recovery interventions for entrepreneurs

The *recovery paradox* is particularly applicable in entrepreneurship, as it is a stressful work context and the key features of entrepreneurial activities are likely to stifle recovery<sup>1</sup>. Entrepreneurship can intensify stress, as it tends to entail a high workload and work intensity, loneliness, resource constraints, and responsibilities for others (Rauch et al., 2018; Stephan, 2018). Moreover, entrepreneurship involves great uncertainty (Rauch et al., 2018; Wincent et al., 2008), which is generally considered one of life's biggest stressors (Greco & Roger, 2003;

---

<sup>1</sup> We note that in entrepreneurship the long-term implications of stress are not clear. Further research is needed with (1) longitudinal designs, (2) heterogeneous samples of entrepreneurs, and (3) a range of measurement techniques to capture the mechanisms that link stressors to well-being and health more broadly.

Monat, Averill, & Lazarus, 1972). Uncertainty is driven by the very nature of entrepreneurial work. The veracity of entrepreneurial ideas are unknown (McMullen, 2015), entrepreneurs are reliant on a range of external agents (e.g., customers, suppliers: Davidsson, Recker, & von Briel, 2018), and are vulnerable to the unpredictable environment in which they operate (Shane & Venkataraman, 2000). This kind of intensified stress can rapidly deplete an entrepreneur's resources. If recovery is impaired, psychological resource renewal is obstructed and the physiological impact of stress can accumulate, threatening entrepreneurs' physical and mental health (McEwen, 2004). In this section we outline the specific features of entrepreneurial work which pose a risk to recovery, beginning with an analogy from the opening quote.

The quote at the beginning of the editorial provides a striking example of an organizational employee encountering entrepreneurial stressors during an initial foray into self-employment. Dayna Winter was a Shopify employee who decided to begin a new venture on her employer's e-commerce platform. Her efforts to open the new store quickly destabilized her personal life in ways she had not experienced as an employee. Even though Winter was a dedicated, high-performing Shopify employee, her experience with entrepreneurship highlights a unique engagement with work, an engagement dissimilar to the experiences of typical organizational employees. The engaging aspects of entrepreneurship, what we call entrepreneurial psychological resources (e.g., autonomy, meaningfulness, and personal identification), are generally recognized for the *positive* influence they have on entrepreneurial well-being (Shir et al., 2019). Notwithstanding, as Dayna experienced, they can sometimes undermine the ability to disengage from work by breaking down work-life boundaries and triggering over-commitment.

Overcommitment and blurred work-life boundaries are problematic when they suppress recovery. Organizational research demonstrates that in boundaryless work, autonomous and engaged individuals gravitate towards managing their work in a manner that ultimately harms

their recovery, leading to burnout (Lupu & Empson, 2015; Michel, 2014; Pérez-Zapata, Pascual, Alvarez-Hernández, & Collado, 2016). The tendency for work-life fluidity to harm recovery is well illustrated in communication technology adoption. As mobile device use is more ubiquitous among workers, individuals generally choose to use mobile phones at home, which provides them with a sense of autonomy over their time (Mazmanian, Orlikowski, & Yates, 2013). Yet this constant connectivity leads to work intensification, and ultimately drives ill-being (Mazmanian et al., 2013; Pérez-Zapata et al., 2016). Similarly, in entrepreneurship, although high autonomy, meaning, and personal identification, make entrepreneurs ‘who they are’ and improve well-being (Stephan et al., 2020), the emotional attachment to meaningful work can turn it into an obsession (Gorgievski et al., 2014; Spivack, McKelvie, & Haynie, 2014), which drives ill-being (de Mol, Ho, & Pollack, 2018). An entrepreneur’s deeply meaningful work tends to make it more difficult to stop working in non-work time and can make entrepreneurs feel so absorbed in their work that they forget to make time for recovery (e.g., sleep, as the opening quote illustrates). Much like vitamin A and D intake, well-being resources can be toxic at excessive levels (Warr, 1994).

Harm can also arise if entrepreneurship’s psychological resources drive entrepreneurs to rank the needs of the venture above their own recovery needs. Entrepreneurs tend to view the survival of the venture as a top-tier priority (van Gelderen, 2016). Yet this is problematic, as entrepreneurial ventures are normally vulnerable in their attempts to acquire resources and gain legitimacy (Goldenstein, Hunoldt, & Oertel, 2019). Needing to generate the resources, capabilities, and support required for autonomous entrepreneurial activity (Hessels, Rietveld, & van der Zwan, 2017; Wei, Cang, & Hisrich, 2015) can pressure entrepreneurs to deprioritize their own needs (van Gelderen, 2016), even when they recognize that they are in grave need of recovery (Williamson, et al., in-press). The deprivation of recovery needs may come about when prioritizing the desires of stakeholders (Renko, 2013), such as delivering goods and

services on a timeframe that pleases a client but prevents individual recovery for the entrepreneur. The need to secure resources, capabilities, and support can also impair psychological detachment and recovery by driving stress, worry, and rumination (Hobfoll, 1989; Meijman & Mulder, 1998). As an evocative example, during times of socio-economic crisis, the self-employed have an increased probability of reporting their first long-term sickness or absence due to a mental disorder (Real et al., 2016). Resource vulnerability makes entrepreneurs more likely to sacrifice time for recovery or directly inhibits recovery activities.

These combined insights highlight that, while entrepreneurial stressors deplete resources, entrepreneurship's psychological resources can sometimes further constrain time and opportunities for entrepreneurial recovery. Additionally, the typical personality characteristics of entrepreneurs may lead them to underestimate and ignore their need for recovery. On average, entrepreneurs tend to be confident, forward-looking, optimistic, and resilient (Baron, Franklin, & Hmieleski, 2016; Rauch & Frese, 2007). Thus, they may overestimate their ability to deal with stress, just as they may overestimate their potential for success (Koellinger, Minniti, & Schade, 2007). Moreover, entrepreneurs tend to be strongly achievement-oriented, seeking challenges and success (e.g. wanting to be the 'best'; Rauch & Frese, 2007). Yet entrepreneurs experience ambivalence or disappointment even when they are successful (e.g., one can always gain more market share or improve processes or offerings relative to competitors; Williamson, Drencheva, & Battisti, in-press). As a result, their drive for achievement and high levels of commitment in an uncertain environment, combined with high autonomy, meaningfulness, and personal identification, may spur entrepreneurs to forgo recovery in favor of more work. Stated another way, some entrepreneurs view recovery as the antithesis of better performance since taking time to recuperate appears incompatible with working even harder and putting in longer hours.

In summary, entrepreneurs have a complex relationship with recovery. The nature of founding and running a venture, combined with the predominant personalities of entrepreneurs, can make recovery difficult or elusive. In order to help entrepreneurs recuperate from stressors, one of the overarching goals of this editorial, we first need to understand the mechanisms associated with recovery. The following section addresses ways in which individuals recover resources, and outlines contemporary research about entrepreneur-specific recovery.

#### **4. How resources can be recovered: A very brief review of past research**

Prior organizational research has uncovered various recovery methods to reclaim beneficial resources required for—and expended by—work. In their seminal article, Sonnentag and Fritz (2007) outline four distinct *psychological recovery* processes. First, individuals need to psychologically detach from work. Detaching from demanding work tasks enables homeostatic resource recovery to take place and facilitates the other three recovery processes. Second, relaxation is required to begin recovery. Disengaging from challenging work tasks does not aid recovery from work stress if one moves directly to another high-demand, stressful non-work task. Third, individuals can recover by developing competency or mastery in a domain of personal interest (e.g., learning a new language). This may represent the most counterintuitive method of recovery since distraction from work comes from other personal, and potentially demanding, development activities. Fourth and finally, individuals recover through perceived control during leisure time (e.g., choosing exactly where and how long to go for a walk). When an individual wields control over leisure time, that person experiences higher well-being and lower psychological distress.

The third and fourth recovery activities help satisfy basic needs of competence, autonomy, and personal control. The relevance of these basic needs in entrepreneurship may be mixed, and warrants robust evaluation. On the one hand, entrepreneurs' work provides richer opportunities to satisfy those needs than employees' work (e.g., Larsson & Thulin, 2019).

The variety inherent in entrepreneurial work may mean that entrepreneurs naturally craft their activities towards things that give them a sense of mastery and control. For example, on a given day an entrepreneur could work on their logo design instead of polishing their pitch-deck because the former gives them a feeling of mastery. Hence, these recovery activities may be less important for entrepreneurs to specifically develop. On the other hand, there are many times entrepreneurs are likely to lack a sense of control (see entrepreneurial disappointment; Williamson, et al., in-press) due to uncertainty, which undermines control, or when needing to meet the demands of stakeholders (e.g., an important client imposing a deadline; van Gelderen 2016). Mastery experiences may not always be available in entrepreneurship either. Due to the broad nature of the entrepreneurial role, entrepreneurs may be required to sometimes work on new and unfamiliar things that they do not feel a sense of mastery in (perhaps, however, this reduces over time through experience, routine and effort investment; Gielnik et al., 2014). Meaningful hobbies and experiences of being in control outside of work, (e.g., rock climbing) could thus provide a valued balance for entrepreneurs.

In addition to these four psychological recovery experiences, *physical exercise* and *sleep* are important means of recovery from work stress (Sonnentag, 2018). Physical exercise enhances well-being and reduces psychological distress including anxiety and depression (Elkington, Cassar, Nelson, & Levinger, 2017; Puterman, Weiss, Beauchamp, Mogle, & Almeida, 2017; Reed & Buck, 2009) and aids recovery through stimulating neurophysiological as well as psychological processes (see Sonnentag, 2018). Sleep is an important physiological recovery process. It regenerates the body's energy resources and if undermined leads to mental and physical health problems (Åkerstedt, 2006; Litwiller, Snyder, Taylor, & Steele, 2017).

Organizational research since Sonnentag and Fritz (2007) continues to inform our understanding of how employees recover from work. At the writing of this manuscript, Google

Scholar lists 1,534 individual peer-reviewed research papers citing<sup>2</sup> the approximately decade-old recovery scale development paper. This subsequent work has continued to add nuance to employee recovery and supports Sonnentag and Fritz's conclusions. Yet more work remains to understand the conditions under which work stymies recovery from work (Sonnentag, 2018). Entrepreneurship offers a beneficial context to study recovery from work.

### **What we know about recovery in entrepreneurship**

Initial evidence indicates that recovery is highly relevant in the entrepreneurship context. As outlined in Table 1, sleeping well has been shown to intensify entrepreneurs' positive moods, and unlock greater imaginativeness, creativity, and innovation in entrepreneurial activities (Weinberger et al., 2018; Williamson et al., 2019). Moreover, detaching from work outside of working hours leads to fewer complaints of exhaustion, less affective rumination, and greater day-by-day well-being (Taris et al., 2008; Wach et al., 2020). These findings are, however, observational. While they allow us to see associations between recovery and positive outcomes, we still do not know what interventions would help entrepreneurs to actually recover and what optimal recovery experiences for entrepreneurs are. In other words, we do not know *how* entrepreneurs should change their behavior so as to best *engage in* recovery and, thus, *how* to establish *solutions to entrepreneurial ill-being*.

[Table 1 About Here]

The few published studies which have strived to *aid* the recovery of entrepreneurs, provide preliminary evidence on the promise of interventions to the field of entrepreneurship. Interventions seek to change certain patterns of behavior with organized activities (Michie, van Stralen, & West, 2011). The few interventions that have been published to-date focus on mindfulness and coaching. Mindfulness studies have employed loving-kindness meditation

---

<sup>2</sup> Search completed on March 6, 2021. Sonnentag and Fritz (2007) is cited 681 times in the Web of Science Core Collection.

methods, delivered to a sample of entrepreneurs (Engel, Noordijk, Spoelder, & van Gelderen, 2020) and through a Randomized Control Trial (Engel, Ramesh, & Steiner, 2020), to mitigate their fear of failure, increase self-compassion, and heighten sustainable business practices. Coaching was employed by Schermuly and colleagues (2020) with nineteen insolvent entrepreneurs. Although the beneficial effects of active coaching proved fleeting, failing to outlast the coaching intervention period, entrepreneurs in this study showed improved psychological well-being, diminished exhaustion, and improved vigilance during the study. These initial and promising results highlight the latent, yet untapped influence of adapting research designs to incorporate interventions for entrepreneurial recovery.

In sum, our understanding of recovery in the entrepreneurship context is limited, and thus we are yet to establish an evidence-driven framework for reducing the ill-being of different entrepreneurs (with different well-being needs) in practice, beyond mindfulness and coaching in the context of insolvent entrepreneurs. Moreover, these limited insights provide little information on the use of interventions in periods of acute entrepreneurial stress, nor if the benefits of intervention can be sustained or how they can be maintained over longer time horizons. Next, we consider advancements in occupational research on recovery which may help us establish a foundation and a road-map to start answering these questions.

### **5. Promising recovery interventions for entrepreneurs**

How to attenuate the impact of work stress on ill-being is increasingly well understood in the context of employees and organizational employment (Bennett, Bakker, & Field, 2018; Daniels, Gedikli, Watson, Semkina, & Vaughn, 2017; Sonnentag et al., 2017). Yet many of the activities and interventions studied in that context hardly translate to entrepreneurship. They often focus on features of the workplace including the influence of leaders, on creating experiences of meaningfulness and mastery not easily available through employed work, on work that is less extensive and does not readily consume evenings and weekends, and where

workplace resources, such as social support from colleagues is readily available. Paying attention to the uniqueness of entrepreneurship requires a different approach to recovery that is more focused on the person, as opposed to others or the work environment. This is because entrepreneurs largely determine the design of their own workplace, and have high autonomy, meaning, and mastery experiences. Many entrepreneurs could integrate recovery experiences into where, when, and how they work (in a manner that most employees cannot), yet they may not do so (e.g., see Section 3. *Why we need recovery interventions for entrepreneurs*). For instance, break and work time regimes in the employee context are often designed by managers, health and safety specialists, or even mandated by law (e.g., OSHA, 2021)—none of which the entrepreneurs may see a need to apply to themselves. Their work is often all-consuming, blurring work-life boundaries, and leaving little (if any) spare time to spend with family or to cultivate friendships and support networks outside of work. We hope this editorial inspires researchers to design interventions for the unique aspects of *entrepreneurial work*.

Three broad recovery interventions types have particular promise for entrepreneurs and the entrepreneurship context. We call these the ‘three R’s of entrepreneurial recovery interventions’: *Respite, Reappraisal, and Regimen*. Respite involves interrupting work for both tangible relief (time in nature, socializing, music) and mental relief (mindfulness and positive reflections). Reappraisal refers to changing perceptions with cognitive behavioral therapy, stress optimization, positive reflections, and experimental disclosure. Regimen includes adding structure through sleep hygiene, exercise routines, and structured breaks. These three approaches to recovering resources are interlinked (e.g., one intervention may span two of the R’s), and their effectiveness likely differs between entrepreneurs (e.g., an exercise intervention may be highly stressful to some, but effective for others, interventions mobilizing social support may be especially effective for entrepreneurs working on their own rather than in a team).

In this section, we outline these person-based and entrepreneurship-relevant approaches to recovery (Table 2) and how they can be adapted to the entrepreneurship context. This list is by no means exhaustive. In fact, in the subsequent section, we encourage scholars to codesign interventions specifically for the unique contexts of different entrepreneurs, and to rigorously test their efficacy. Notwithstanding, the current section is aimed to provide a valuable foundation, and to guide entrepreneurship scholars in promising directions.

[Insert Table 2 About Here]

### **Respite**

To take respite is to break away from work or to experience relief from stressors associated with working. Taking a break includes disengagement from work for a brief period during the workday, taking time off during non-work hours (i.e., evenings or weekends), and longer breaks for vacation or holiday. Experimental evidence suggests that small breaks (so-called microbreaks of 5 to 10 min duration) during the workday restore energy and attention during subsequent working time (Bennett, Gabriel, & Calderwood, 2020). Thus, small breaks, which are spent mentally detaching from work, not only aid recovery, but also support follow-on productivity. In addition to micro-breaks, respite intervention techniques include the cessation of work to participate in (a) tangible actions that enable respite (listening to music, time in nature, and socializing) and (b) mental techniques for respite (mindfulness and positive reflections). We limit our discussion here to tangible activities for respite since we explained mindfulness as a mental technique in a previous section.

Listening to music when seeking respite from work facilitates relaxation. Kume et al. (2017) provide music-as-respite evidence by asking study participants, immediately following a work shift, to spend 30 minutes in silence or to spend 30 minutes listening to soft music. Participants reported greater feelings of relaxation and healing when listening to music. Time in nature improves respite as well. Going outside to spend non-work time in a natural setting

improves moods, sating a universal human need to connect to the natural world (McMahan & Estes, 2015). McMahan and Estes (2015) conducted a meta-analysis of 32 respite studies in natural backdrops. Their findings consistently show higher positive and lower negative affect after a natural-backdrop experience. Interestingly, these effects are consistent for natural settings preserved within cityscapes and in more wild surroundings, implying that time-in-nature benefits need not be limited to rural entrepreneurs. Adding nuance to what we know about being outdoors in a city, Passmore and Holder (2017) employ an RCT intervention exploring the effects of respite outside for three separate conditions over a two-week period: three groups were instructed to either 1) appreciate observed natural settings, 2) appreciate observed human-built objects, or 3) conduct business-as-usual (i.e., the control condition). Participants assigned to the first condition (natural) showed significantly better moods and a better sense of social connectedness compared to either the human-built or business-as-usual conditions, implying that natural immersion drives beneficial effects on well-being.

Although yet to be examined through an RCT design, lack of social activity when away from work harms recovery (Fritz & Sonnentag, 2005). Social support attenuates depression, anxiety, cognitive disturbance, and anger (Ariza-Montes, Leal-Rodríguez, Rodríguez-Félix, & Albort-Morant, 2017) and loneliness is connected to higher mortality (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). Although a lack of social activity may not typically be problematic for employees, this could be a source of recovery that frequently escapes entrepreneurs (Fernet et al., 2016). Observational research suggests that social interaction when away from work enables recovery better than social isolation (Fritz & Sonnentag, 2005). Socializing may provide other benefits too. For example, entrepreneurs who socialize are exposed to information, which benefits learning (Fischer & Reuber, 2011; Maula, Autio, & Murray, 2009). Socializing also builds weak ties, providing downstream well-being and

network effects, and assists entrepreneurs and their businesses in the longer term (Stam, Arzlanian, & Elfring, 2014).

Except for mindfulness, we know little about the effectiveness of respite recovery activities for entrepreneurs. Indeed, for entrepreneurs who are ‘new to recovery’, interventions could be cascaded such that they start by introducing micro-breaks throughout the day. Such micro-breaks can be supported through applications (which block the computer every 55 min for 5 min<sup>3</sup>) or simple reminders set up on one’s smartphone. Once entrepreneurs experience the productivity supporting effects of this low-effort, low-investment recovery activity, they may be more willing to engage in what they likely view as more time-consuming respite activities (e.g., spending 30 minutes listening to music, going for a walk in nature, or scheduling socializing activities). Respite is promising for entrepreneurs specifically, as they tend to possess the autonomy for adapting their workday (a privilege rarely shared with employee samples).

### **Reappraisal**

The next theme of recovery interventions involves cognitive exercises to reappraise stress and behaviors, which may also help to improve entrepreneurs’ attitudes toward recovery practices. One such reappraisal recovery intervention, Cognitive-Behavioral Therapy (CBT), holds great promise for entrepreneurial samples. CBT assists individuals in redirecting harmful cognitions and behaviors into more positive ones. In a stressful self-employed career, resilient entrepreneurs are more likely to appraise difficult and stressful business occurrences as challenging puzzles to be solved (Mitchell, Greenbaum, Vogel, Mawritz, & Keating, 2019), which may serve as a beneficial way to optimize stress and maximize performance. CBT holds the potential to reframe individual interpretations of stressful business situations. Bryant et al.

---

<sup>3</sup> Productivity apps often have micro-breaks in-built as have applications designed from an occupational health perspective to avoid repetitive strain injury.

(1998) show that CBT performs better than supportive counseling in staving off long-term psychological disorders. Other organizational research has shown CBT ameliorates over-commitment at work (specifically, a stress management intervention: Li et al., 2017), and enables other recovery efforts like sleep (Barnes, Miller, & Bostock, 2017). Over-commitment and insomnia both represent frequent frustrations for entrepreneurs, and CBT offers a potential intervention to reframe cognitions around these behaviors.

Similarly, researchers have taught individuals to reframe their perspectives towards stress (e.g. through stress mindset interventions, Crum, Jamieson, & Akinola, 2020; Keech, Hagger, & Hamilton, 2019). Individuals can optimize stress through training. For example, addressing stressors immediately following a period of recovery helps an individual adapt to stress management over time and become more resilient to future stressful events (Keech et al., 2019). Entrepreneurship researchers should continue to refine these experiments for practicing entrepreneurs, by exploring how entrepreneurs, in particular, can optimize specific inevitable entrepreneurial stressors (e.g., “pivots”) and particularly acute stressors (e.g., issues accessing equipment, tools, and supplies) for maximal psychological welfare and minimal harm.

Building on these stress mindset interventions, a new intervention that helps entrepreneurs to reframe their perspective on recovery could be developed. Such an intervention would help entrepreneurs to cultivate a ‘recovery or self-care mindset’ by emphasizing the health and productivity benefits (e.g., for innovation) of engaging in recovery. To first sensitize entrepreneurs for self-care, diary studies may be powerful. Such studies could track entrepreneurs’ recovery activity, well-being, and productivity through apps and wearable devices (e.g., ‘health watches’ that track sleep and heart rates) and thus may help entrepreneurs to recognize and understand the link between recovery (e.g., quality sleep, exercise) and greater well-being and productivity in their daily work.

Reappraisal also offers a new lens through which entrepreneurs may view momentous events in an entrepreneurial journey, such as failures or large strategic revisions. Positive reframing during these times can assist an entrepreneur's sense-making by reevaluating the causes and consequences of the event. When a venture fails, entrepreneurs frequently attribute the failure to their own venturing capabilities (Cardon, Stevens, & Potter, 2011). Attributing entrepreneurial problems to one's own shortcomings, in turn, relate to ill-being amongst entrepreneurs (e.g., depression; Williamson, et al., in-press). Yet alternative framing through reappraisal enables entrepreneurial learning, minimizes self-blame, and facilitates continued progress following failure (Shepherd, Patzelt, & Wolfe, 2011). Comparably, when a venture undergoes a major change in strategic initiatives, implementing a pivot (Kirtley & O'Mahony, 2020) or a novel innovation to the business model (Snihur & Zott, 2020), entrepreneurs might attribute this new direction as lost progress from previous initiatives. This is especially true when an entrepreneur entangles a personal work identity with a new venture idea (Grimes, 2018). Critical feedback suggesting alternative allocation of the firm's resources (i.e., proposing a pivot), can be interpreted as a stress-inducing personal attack for some founders. Reappraisal enables entrepreneurs to disentangle their identity from an idea, which could help entrepreneurs become more receptive to critical feedback that would give rise to a propitious change in strategic direction. Stress optimization or CBT interventions have the potential to frame these possibly painful events in a more favorable light, and in turn better-enable recovery processes.

### **Regimen**

Regimen facilitates recovery by enabling psychological and physical detachment through structure, which can involve breaks and routines or behaviors to allow for normal biological function (e.g., sleep and exercise). Barnes et al., (2017) and Valshtein et al., (2020) effectively taught occupationally employed individuals to revise their sleep behaviors and

cognitions to combat sleeplessness, with positive influences on work-relevant outcomes such as diminished negative affect, increased job satisfaction, and greater self-control (Barnes et al., 2017; Valshtein et al., 2020). This intervention is highly promising for entrepreneurship as sleep has already been established to positively influence entrepreneurial outcomes (discussed previously), and yet it is not clear if entrepreneurs can be trained to improve their sleep nor if sleep interventions are effective under conditions of acute entrepreneurship stress (e.g., sleeping the night before a pitch when the firm is nearing bankruptcy).

Hahn et al., (2011) developed an intervention to train workers on how to disengage from work via break training, adding 'regimen' to 'respite.' Using regimen to broaden recovery education and add structure to breaks helps ensure regular adherence to scheduled respite. In the break training study, Hahn and colleagues (2011) educated a group of 47 workers on what recovery is and how they can implement it, through things like mastery reflection, relaxation training, and sleep hygiene. This intervention produced significant differences between the trained group and the control (a waitlist group) showing higher mastery, psychological detachment, relaxation, and control plus improved sleep quality and affective states. Scheduling breaks may be viewed as overly onerous for individuals who manage their own work hours. The dedication of entrepreneurs to their work combined with high workload often means that they fail to take breaks. Adding regimen and regularity to breaks increases the likelihood that some modicum of respite is achieved, even if the break is short-lived.

Some entrepreneurs may be able to choose a physical space (e.g., a café, an office) with set opening hours to act as an external control to help with regimen. Utilizing a physical external space could have the added benefit of establishing boundaries between bodily work and home spaces. Entrepreneurs who work from home or in their own office may impose regimen by scheduling regular (lunch or coffee) breaks with their partner or may adopt a pet that requires regular walking. Indeed, people who employ micro-breaks between working stints

report lower stress, greater self-efficacy, and better moods. They also sleep better at night (Hahn et al., 2011).

Entrepreneurs are also well poised to design the structure of their work in terms of what specific activities they do and do not start (and finish) on a given day. Although more experimental evidence is needed, minimizing unfinished work may be another important recovery determinant, aiding both sustained disengagement and lasting effects beyond the break itself (Syrek, Weigelt, Kühnel, & de Bloom, 2018). In sum, while entrepreneurs may struggle to implement a regimen, they may also be the most adept group of workers to design where, when, and how they work, which provides great opportunities for experimentation as well as awareness-raising among entrepreneurs about the need for recovery in the first place.

## **6. How to design and deliver interventions: A few words of guidance**

We encourage researchers to refine and extend insights on interventions to the entrepreneurial context, but urge scholars to (a) consider heterogeneity among entrepreneurs and (b) co-design interventions with them, (c) robustly evaluate interventions, in order to establish a body of evidence to inform entrepreneurial practice, and (d) consider creative ways for conducting interventions to enable better access to all range of entrepreneurs. We will address these points briefly now.

### **Bracing for entrepreneur heterogeneity**

Entrepreneurs are highly heterogeneous (Welter et al., 2017; Wiklund, Nikolaev, et al., 2019). The effectiveness of a given recovery intervention may differ for different types of entrepreneurs, and according to the different conditions they operate in. As such, we urge researchers to consider entrepreneur heterogeneity<sup>4</sup> when expanding upon the three R's of entrepreneurial recovery interventions to (a) consider the differential outcomes that

---

<sup>4</sup> Different types of entrepreneurs may also process stressors differently (Shir et al., 2019).

interventions will produce for some groups of entrepreneurs, and (b) craft interventions for specific entrepreneur samples.

We expect that entrepreneurial interventions will reveal heterogeneity in the magnitude of the recovery benefits between different groups of entrepreneurs. Entrepreneurs with larger burdens on physiological and psychological resources should gain more from recovery interventions than entrepreneurs with fewer resource burdens. The need for recovery may be particularly extreme among certain entrepreneurs, for example, entrepreneurs struggling to make ends meet in the COVID-19 pandemic, or solo-entrepreneurs lacking social support, thereby positively influencing intervention results. Greater attention to heterogeneity among entrepreneurs will help us understand meaningful recovery variations among the population of entrepreneurial careers. Researchers assigning recovery interventions should measure their diverse attributes so that we can learn which types of entrepreneurs benefit most from different recovery interventions. A better understanding of the conditions that entrepreneurs operate in will be vital for effectively delivering interventions.

One method scholars use to broadly explain differences between entrepreneurs and their varying work conditions, are the motivations that brought them into an entrepreneurial career. Individuals who become self-employed due to limited employment options (i.e., necessity entrepreneurs; Acs, 2006) are more likely to face stressors around resource constraints than entrepreneurs who are drawn to self-employment (i.e., opportunity entrepreneurs) (Block & Wagner, 2010). Indeed, financial resource constraints and poor venture performance, which are more often observed for necessity entrepreneurs, are one of the most detrimental stressors for entrepreneurs (Gorgievski et al., 2010; Stephan, 2018). Moreover, necessity entrepreneurs typically have fewer or no employees, and therefore rarely have the possibility to delegate work for engaging in some respite activities (e.g., local holidays). At the same time, necessity entrepreneurs may put less emphasis on autonomy and may identify less with self-employment

because it is a career that they have been pushed into. Consequently, they may have greater ease in psychologically detaching from work at set intervals (regimen).

Opportunity entrepreneurs, on the other hand, gain greater subjective benefits from their career choice than necessity entrepreneurs (Block & Koellinger, 2009; Carree & Verheul, 2012; Larsson & Thulin, 2019), which may make them more likely than necessity entrepreneurs to over-engage in work by blurring work-life boundaries. Regimen interventions may, therefore, be highly valuable to opportunity entrepreneurs, but equally difficult to convince opportunity entrepreneurs to engage in. Unlike necessity entrepreneurs, opportunity entrepreneurs are more likely to have employees and more resources that could make outsourcing work to others a possibility (e.g., calls after hours could go to an employee). Yet opportunity entrepreneurs are often so deeply committed to their work and venture, that they often find it difficult to delegate to others who do not have the same deep commitment to their venture. Thus, recovery interventions with “opportunity entrepreneurs” may need to first work on supporting entrepreneurs to reappraise their approach to delegation and make this the first step of a recovery intervention. Social entrepreneurs are likely to face similar challenges as opportunity entrepreneurs to detach from work as they view their work, which tackles social needs, as particularly meaningful.

Interventions that actively match recovery activities to entrepreneurs (or vice versa) also hold great promise for the field, and may be extended further beyond the distinction of opportunity/necessity entrepreneurs. Scholars may take into account other subgroups of entrepreneurs (Newlin, 2020) such as their business environment (e.g., industry uncertainty), demographic factors (e.g., solo entrepreneur, gender), and personal circumstances of the entrepreneur (e.g., young children at home, loneliness). For instance, while empirical research demonstrates that business owners have significantly less social support than managers and that social support negatively relates to psychiatric symptoms (Ariza-Montes et al., 2017), solo

entrepreneurs may benefit in particular from social respite interventions (due to working alone). A compelling way of managing entrepreneur heterogeneity for interventions may be to design interventions with such entrepreneur sub-groups, which we will discuss now.

### **Co-creating interventions**

To effectively tailor interventions to sub-groups of entrepreneurs, scholars can consider co-creating interventions. Co-creation is an approach for crafting interventions that involves an active partnership with stakeholders (in our case, entrepreneurs), from “needs assessment to content development, pilot testing and dissemination” (Eyles et al., 2016, p. 161). By tailoring interventions to specific conditions in this manner, co-creation allows for greater effectiveness (Syme, 2004; Wallerstein, Duran, Oetzel, & Minkler, 2018), and may enhance the relevance and acceptability of different recovery interventions among set groups of entrepreneurs. Using this approach, entrepreneurs would collaboratively help identify ways to improve their recovery, and ways of implementing interventions in their different contexts (Sanders & Stappers, 2008). This expands the pool of ideas (tapping entrepreneurs’ “collective creativity”) for customizing recovery interventions to the different contexts of entrepreneurs (Greenhalgh, Jackson, Shaw, & Janamian, 2016). In other words, the process of co-creation itself can deepen our understanding of the nature of entrepreneurial work and, in turn, foster more effective interventions.

Co-created interventions lend themselves to robust evaluation (Hawe, Shiell, & Riley, 2004). Hawe et al., (2004) demonstrate that the *essential functions* of an intervention can be maintained even though the specific *form* of an intervention is tailored to specific groups through co-creation. This enables co-created entrepreneurial recovery interventions to be robustly evaluated and then reproduced (Hawe et al., 2004). We will expand on how researchers can engage in the rigorous evaluation of recovery interventions now.

### **Key rules for robustly evaluating interventions**

The gold standard for evaluating the effectiveness of interventions is Randomized Controlled Trials (RCTs), which involve randomly allocating participants to one or more experimental conditions and a control condition (O’Shea, O’Connell, & Gallagher, 2016). Conducting RCTs involves methodological choices that entrepreneurship scholars may not yet be familiar with (Anderson et al., 2019; Stevenson et al., 2020; Williams et al., 2019). While some choices are equally acceptable for different recovery interventions and research questions, such as the choice between using laboratory conditions (explanatory RCTs) or field conditions (pragmatic RCTs), others are not (such as the choice to randomly allocate or not). To guide researchers through the most consequential choices for successfully executing a robust entrepreneurial recovery intervention, we provide key guidelines in Table 3. The table outlines ten best-practice suggestions for entrepreneurial recovery interventions via RCTs.

[Insert Table 3 About Here]

### **Remote delivery**

It is important to note at this point, that because entrepreneurs differ from employed workers in meaningful ways, researchers should adapt intervention delivery methods to an entrepreneur-specific context. Entrepreneurs tend to work alone or in small teams, do not have fixed work hours, nor supervisors or a large group of peers to lean-on for social support. Many standard organizational interventions are conducted in the workplace with large training programs. Therefore, entrepreneurship scholars may need to re-think the standard delivery of recovery interventions. While some entrepreneurs can be accessed via accelerators and local groups, in-person and multi-stage group training programs for most entrepreneurs could prove infeasible.

Entrepreneurship scholars may find remote delivery of interventions to be useful. Health interventions have tackled issues with access and provide us with some clues. Scholars

have improved adherence and goal-setting through the ongoing delivery of SMS text-messages (Fjeldsoe, Miller, Prosser, & Marshall, 2019; Lester et al., 2010), influenced self-motivation through social media communication (Scheerman, Hamilton, Sharif, Lindmark, & Pakpour, 2020), and promoted health and well-being through gameplay (Schakel et al., 2019). Reminder functions on smart-phones, apps, or smartwatches can support interventions, and allow them to be tailored to entrepreneurs' current level of recovery engagement (Eatough, Shockley, & Yu, 2016). A recent study using smart-watches to deliver and monitor a breathing intervention, for example, reported one-sixth fewer stress instances among participants randomly assigned to the smart-watches group compared to the waiting list group (Smith, Santoro, Moraveji, Susi, & Crum, 2020). Smart-watches and associated health apps allow users to share information on their current levels of activity, physical exercise, and sleep (Pakhomov, Thuras, Finzel, Eppel, & Kotlyar, 2020). Therefore, the same indicators may be used to deliver or assess intervention effects. Of course, measurement reliability and validity of some wearable devices is a concern (Coughlin & Stewart, 2016); yet several providers conducted studies to verify the accuracy of the measures that they track (e.g., Kang et al., 2017). Entrepreneurship scholars may benefit from employing similar techniques.

Remote delivery of interventions could be particularly valuable for entrepreneurs in contexts that produce intense and acute stress, such as crisis. In the case of the COVID-19 pandemic, for example, most interventions needed to be delivered online due to social-distancing requirements. There is promising evidence to indicate that online interventions can produce significant results (Spijkerman, Pots, & Bohlmeijer, 2016). Indeed, home-based recovery interventions implemented during the COVID-19 pandemic were effective at positively influencing recovery and well-being in the general population. For example, an eight-week online virtual mindfulness meditation intervention was related to a significant reduction in anxiety, depression, and perceived stress scores in the general public (Ahmad, El

Morr, Ritvo, Othman, & Moineddin, 2020). Similarly, a 10-day smartphone mindfulness intervention comprised of ten minutes of daily audio recording was associated with better sleep quality and less anxiety, compared to a mind wandering intervention (Zheng, Yao, & Narayanan, 2020). An intervention that reminded participants of how they have recently satisfied their basic psychological needs (relatedness, competence, and autonomy) during the crisis was also associated with an increase in mental well-being and a decrease in perceived stress (Cantarero, van Tilburg, & Smoktunowicz, 2020). Remote technology can thus both monitor well-being and provide entrepreneurs with cues to engage in self-care (Helbostad et al., 2017). The effectiveness of such interventions with entrepreneur groups is not yet known, and they may need more support in setting up a regimen (e.g. through smartphone or email reminders) to implement such interventions.

In sum, we hope that scholars will consider the unique contexts in which entrepreneurs operate and utilize creativity in how they design interventions to best meet different entrepreneurs' needs. If interventions can be delivered face to face, this could have great value for entrepreneurs, particularly considering that loneliness and social isolation are stressors in entrepreneurship (e.g., such interventions could also facilitate the development of support networks and learning from each other). Yet as we have discussed, entrepreneurs are a heterogeneous group, and there are cases and times that remote delivery of interventions may be the only viable option (e.g., rural entrepreneurship, crisis, pandemic). Interventions that are context-specific and entrepreneurial in their design and delivery hold great promise for increasing the reach of interventions to aid a wider array of both growth-oriented and 'everyday' entrepreneurs.

## 7. Conclusions

The number and intensity of stressors that entrepreneurship involves can pose a real threat to entrepreneurial well-being and health, and the very existence of an entrepreneur's

businesses. We draw attention to the critical role of recovery for entrepreneurs to break the cycle of ever-expanding work fueled by intensely demanding and highly autonomous, engaging, and meaningful work, which can stand in the way of recovery in entrepreneurship. Recovery ameliorates the longitudinal build-up of allostatic load that endangers entrepreneurs' physical and mental health (McEwen, 2004). To make entrepreneurship a career path in which individuals can thrive, we need to support entrepreneurs to appreciate the important role of recovery as an investment in their future well-being, health, and productivity. We showcased what happiness researchers agree to be effective and feasible (Buettner, Nelson, & Veenhoven, 2020) recovery interventions from the science of well-being and occupational research and how they may be adapted to fit the unique context of entrepreneurship. This provides a roadmap for entrepreneurship scholars to advance our understanding of entrepreneurial recovery and ill-being.

Recovery is most needed when it is most elusive, such as when work is intensively stressful. Interestingly, the autonomy wielded by entrepreneurs that may drive the loss of recovery may also be the key to successful interventions in the entrepreneurship context. For example, entrepreneurs reduced their working hours by approximately three hours after receiving a diagnosis of chronic disease (e.g., congestive heart failure, lung disease), while employees did not and possibly could not (Fleischmann et al., 2018). Scholars would make important progress towards addressing entrepreneurial ill-being by co-designing and marketing interventions amongst entrepreneurial samples to combat the inability to recover while encountering considerable stressors.

Our extension of occupational insights—to design interventions relevant for entrepreneurs—presents opportunities to construct new theoretical and practical knowledge. These new insights hold reciprocal implications for entrepreneurs and wage employees alike. Discoveries in entrepreneurship research, where the recovery paradox holds noteworthy

relevance, can advance our understanding of resource recovery in occupational research. The nature of work is changing, which amplifies uncertainty, autonomy, and responsibility (which are already abundant in an entrepreneur's work). These shifts can bring entirely new problems for employee well-being. The kinds of problems that have long-plagued entrepreneurs, such as social isolation. The conditions that enable recovery in entrepreneurship may later be extended to help establish a healthier future of work more broadly.

Implementing recovery interventions among entrepreneurs, may also produce wider benefits, by positively influencing the well-being of others. An entrepreneur's own practices can role model behavior to people and have an imprinting effect in an organization (Mathias, Williams, Smith, 2015). If an entrepreneur can effectively model engagement in respite, reappraisal, and regimen activities, they may in-turn assist in reducing the potential for recovery impairment to take hold among employees and cofounders.

In addition to providing much-needed examples of behavioral interventions in entrepreneurship (of which there are currently few; Rauch & Hulsink, 2015), the new line of research on entrepreneurial recovery outlined in this editorial could benefit the field by introducing the notion of recovery tensions in entrepreneurship. We expect that this will pave the way in providing more pragmatic solutions for combatting some of the ills of entrepreneurship.

## 8. References

- Acs, Z. (2006). How is entrepreneurship good for economic growth? *Innovations: Technology, Governance, Globalization*, 1, 97–107.
- Ahmad, F., El Morr, C., Ritvo, P., Othman, N., & Moineddin, R. (2020). An eight-week, web-based mindfulness virtual community intervention for students' mental health: Randomized controlled trial. *JMIR Mental Health*, 7, e15520.
- Åkerstedt, T. (2006). Psychosocial stress and impaired sleep. *Scandinavian Journal of Work, Environment & Health*, 32, 493–501.
- Almén, N., Lisspers, J., Öst, L.-G., & Sundin, Ö. (2020). Behavioral stress recovery management intervention for people with high levels of perceived stress: A randomized controlled trial. *International Journal of Stress Management*, 27, 183–194.
- Anderson, B. S., Wennberg, K., & McMullen, J. S. (2019). Editorial: Enhancing quantitative theory-testing entrepreneurship research. *Journal of Business Venturing*, 34, 1–11.
- Ariza-Montes, A., Leal-Rodríguez, A. L., Rodríguez-Félix, L., & Albort-Morant, G. (2017). Can an internal locus of control and social support reduce work-related levels of stress and strain. *Journal of Occupational and Environmental Medicine*, 59, 903–912.
- Bae, S.-H. (2017). Work hours of immigrant versus U.S.-born female workers. *Workplace Health Saf*, 65, 478–486.
- Barnes, C. M., Miller, J. A., & Bostock, S. (2017). Helping employees sleep well: Effects of cognitive behavioral therapy for insomnia on work outcomes. *Journal of Applied Psychology*, 102, 104–113.
- Baron, R. A. (2010). Job design and entrepreneurship: Why closer connections = mutual gains. *Journal of Organizational Behavior*, 31, 370–378.
- Baron, R. A., Franklin, R. J., & Hmieleski, K. M. (2016). Why entrepreneurs often experience low, not high, levels of stress. *Journal of Management*, 42, 742–768.
- Barton, J., & Pretty, J. (2010). What is the best dose of nature and green exercise for improving mental health? A multi-study analysis. *Environmental Science & Technology*, 44, 3947–3955.
- Bennett, A. A., Bakker, A. B., & Field, J. G. (2018). Recovery from work-related effort: A meta-analysis. *Journal of Organizational Behavior*, 39, 262–275.
- Bennett, A. A., Gabriel, A. S., & Calderwood, C. (2020). Examining the interplay of micro-break durations and activities for employee recovery: A mixed-methods investigation. *Journal of Occupational Health Psychology*, 25, 126–142.
- Binnewies, C., Sonnentag, S., & Mojza, E. J. (2009). Feeling recovered and thinking about the good sides of one's work. *Journal of Occupational Health Psychology*, 14, 243–256.
- Block, J., & Koellinger, P. (2009). I can't get no satisfaction-Necessity entrepreneurship and procedural utility. *Kyklos*, 62, 191–209.
- Block, J., & Wagner, M. (2010). Necessity and opportunity entrepreneurs in Germany: Characteristics and earnings differentials. *Schmalenbach Business Review*, 62, 154–174.
- Boot, W. R., Simons, D. J., Stothart, C., & Stutts, C. (2013). The pervasive problem with placebos in psychology. *Perspectives on Psychological Science*, 8, 445–454.
- Brown, D. K., Barton, J. L., Pretty, J., & Gladwell, V. F. (2014). Walks4Work: Assessing the role of the natural environment in a workplace physical activity intervention. *Scandinavian Journal of Work, Environment & Health*, 40, 390–399.
- Bryant, R. A., Harvey, A. G., Dang, S. T., Sackville, T., & Basten, C. (1998). Treatment of acute stress disorder: A comparison of cognitive-behavioral therapy and supportive counseling. *Journal of Consulting and Clinical Psychology*, 66, 862–866.

- Buettner, D., Nelson, T., & Veenhoven, R. (2020). Ways to greater happiness: A delphi study. *Journal of Happiness Studies*, 21, 2789–2806.
- Cantarero, K., van Tilburg, W. A., & Smoktunowicz, E. (2020). Affirming Basic Psychological Needs Promotes Mental Well-Being During the COVID-19 Outbreak. <https://doi.org/10.31234/osf.io/pyhce>
- Cardon, M. S., & Patel, P. C. (2015). Is stress worth it? Stress-related health and wealth trade-offs for entrepreneurs. *Applied Psychology*, 64, 379–420.
- Cardon, M. S., Stevens, C. E., & Potter, D. R. (2011). Misfortunes or mistakes? *Journal of Business Venturing*, 26, 79–92.
- Cardon, M. S., Wincent, J., Singh, J., & Drnovsek, M. (2009). The nature and experience of entrepreneurial passion. *Academy of Management Review*, 34, 511–532.
- Carree, M. A., & Verheul, I. (2012). What makes entrepreneurs happy? Determinants of satisfaction among founders. *Journal of Happiness Studies*, 13, 371–387.
- Chida, Y., & Steptoe, A. (2008). Positive Psychological Well-Being and Mortality: A Quantitative Review of Prospective Observational Studies. *Psychosomatic Medicine*, 70, 741–756.
- Clark-Carter, D., & Marks, D. F. (2018). Intervention studies: Design and analysis. In D. F. Marks & L. Yardley (Eds.), *Research methods for clinical and health psychology* (pp. 166–184). Thousand Oaks, CA.: SAGE Publications.
- Clauss, E., Hoppe, A., O'Shea, D., González Morales, M. G., Steidle, A., & Michel, A. (2018). Promoting personal resources and reducing exhaustion through positive work reflection among caregivers. *Journal of Occupational Health Psychology*, 23, 127–140.
- Coughlin, S. S., & Stewart, J. (2016). Use of consumer wearable devices to promote physical activity: A review of health intervention studies. *Journal of Environment and Health Science*, 2, 1–6.
- Crum, A. J., Jamieson, J. P., & Akinola, M. (2020). Optimizing stress: An integrated intervention for regulating stress responses. *Emotion (Washington, D.C.)*, 20, 120–125.
- Daniels, K., Gedikli, C., Watson, D., Semkina, A., & Vaughn, O. (2017). Job design, employment practices and well-being: a systematic review of intervention studies. *Ergonomics*, 60, 1177–1196.
- Davidsson, P., Recker, J., & von Briel, F. (2018). External enablement of new venture creation: A framework. *Academy of Management Perspectives*, amp.2017.0163.
- de Mol, E., Ho, V. T., & Pollack, J. M. (2018). Predicting entrepreneurial burnout in a moderated mediated model of job fit. *Journal of Small Business Management*, 56, 392–411.
- de Vries, J. D., van Hooff, M. L. M., Guerts, S. A., & Kompier, M. A. J. (2017). Exercise to reduce work-related fatigue among employees: a randomized controlled trial. *Scandinavian Journal of Work, Environment & Health*, 43, 337–349.
- Deaton, A., & Cartwright, N. (2018). Understanding and misunderstanding randomized controlled trials. *Social Science and Medicine*, 210, 2–21.
- Eatough, E., Shockley, K. M., & Yu, P. (2016). A review of ambulatory health data collection methods for employee experience sampling research. *Applied Psychology*, 65, 322–354.
- Elkington, T. J., Cassar, S., Nelson, A. R., & Levinger, I. (2017). Psychological responses to acute aerobic, resistance, or combined exercise in healthy and overweight individuals: A systematic review. *Clinical Medicine Insights: Cardiology*, 11, 117954681770172.
- Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology*, 84, 377–389.

- Engel, Y., Noordijk, S., Spoelder, A., & van Gelderen, M. (2020). Self-compassion when coping with venture obstacles: Loving-kindness meditation and entrepreneurial fear of failure. *Entrepreneurship Theory and Practice*, 104225871989099.
- Engel, Y., Ramesh, A., & Steiner, N. (2020). Powered by compassion: The effect of loving-kindness meditation on entrepreneurs' sustainable decision-making. *Journal of Business Venturing*, 105986.
- Eyles, H., Jull, A., Dobson, R., Firestone, R., Whittaker, R., Te Morenga, L., ... Mhurchu, C. N. (2016). Co-design of mHealth Delivered Interventions: A Systematic Review to Assess Key Methods and Processes. *Current Nutrition Reports*, 5, 160–167.
- Fernet, C., Torrès, O., Austin, S., & St-Pierre, J. (2016). The psychological costs of owning and managing an SME: Linking job stressors, occupational loneliness, entrepreneurial orientation, and burnout. *Burnout Research*, 3, 45-53.
- Fischer, E., & Reuber, A. R. (2011). Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior? *Journal of Business Venturing*, 26, 1–18.
- Fjeldsoe, B. S., Miller, Y. D., Prosser, S. J., & Marshall, A. L. (2019). How does mobilemums work? Mediators of a physical activity intervention. *Psychology and Health*, 0, 1–16.
- Fleischmann, M., Carr, E., Xue, B., Zaninotto, P., Stansfeld, S. A., Stafford, M., & Head, J. (2018). Changes in autonomy, job demands and working hours after diagnosis of chronic disease: a comparison of employed and self-employed older persons using the English Longitudinal Study of Ageing (ELSA). *Journal of Epidemiology and Community Health*, 72, 951–957.
- Frattaroli, J. (2006). Experimental disclosure and its moderators: A meta-analysis. *Psychological Bulletin*, 132, 823–865.
- Fritz, C., & Sonnentag, S. (2005). Recovery, health, and job performance: Effects of weekend experiences. *Journal of Occupational Health Psychology*, 10, 187–199.
- Gish, J. J., Wagner, D. T., Grégoire, D. A., & Barnes, C. M. (2019). Sleep and entrepreneurs' abilities to imagine and form initial beliefs about new venture ideas. *Journal of Business Venturing*, 34, 105943.
- Goldenstein, J., Hunoldt, M., & Oertel, S. (2019). How optimal distinctiveness affects new ventures' failure risk: A contingency perspective. *Journal of Business Venturing*, 34, 477–495.
- Gorgievski, Marjan, J., Antonio Moriano, J., B. Bakker, A., Moriano, J. a, Bakker, A. B., J. Gorgievski, M., ... B. Bakker, A. (2014). Relating work engagement and workaholism to entrepreneurial performance. *Journal of Managerial Psychology*, 29, 106–121.
- Gorgievski, M. J., Bakker, A. B., Schaufeli, W. B., van der Veen, H. B., Giesen, C. W. M., Gorgievski, Marjan, J., ... Gorgievski, M. J. (2010). Financial problems and psychological distress: Investigating reciprocal effects among business owners. *Journal of Occupational & Organizational Psychology*, 83, 513-530.
- Greco, V., & Roger, D. (2003). Uncertainty, stress, and health. *Personality and Individual Differences*, 34, 1057–1068.
- Greenhalgh, T., Jackson, C., Shaw, S., & Janamian, T. (2016). Achieving Research Impact Through Co - creation in Community - Based Health Services: Literature Review and Case Study. *The Milbank Quarterly*, 94, 392 - 429.
- Grimes, M. G. (2018). The pivot: How founders respond to feedback through idea and identity work. *Academy of Management Journal*, 61, 1692–1717.
- Grosch, J. W., Caruso, C. C., Rosa, R. R., & Sauter, S. L. (2006). Long hours of work in the U.S.: Associations with demographic and organizational characteristics, psychosocial working conditions, and health. *American Journal of Industrial Medicine*, 49, 943–952.

- Gunia, B. C., Gish, J. J., & Mensmann, M. (2021). The Weary Founder: Sleep Problems, ADHD-Like Tendencies, and Entrepreneurial Intentions. *Entrepreneurship Theory and Practice*, 45, 175–210.
- Hahn, V. C., Binnewies, C., Sonnentag, S., & Mojza, E. J. (2011). Learning how to recover from job stress: Effects of a recovery training program on recovery, recovery-related self-efficacy, and well-being. *Journal of Occupational Health Psychology*, 16, 202–216.
- Hawe, P., Shiell, A., & Riley, T. (2004). Complex interventions: How “out of control” can a randomised controlled trial be? *Bmj*, 328, 1561.
- Helbostad, J. L., Vereijken, B., Becker, C., Todd, C., Taraldsen, K., Pijnappels, M., ... Mellone, S. (2017). Mobile health applications to promote active and healthy ageing. *Sensors (Switzerland)*, 17, 1–13.
- Hessels, J., Rietveld, C. A., & van der Zwan, P. (2017). Self-employment and work-related stress: The mediating role of job control and job demand. *Journal of Business Venturing*, 32, 178–196.
- Hobfoll, S. E. (1989). Conservation of resources. A new attempt at conceptualizing stress. *The American Psychologist*, 44, 513–524.
- Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality. *Perspectives on Psychological Science*, 10, 227–237.
- Hülshager, U. R., Feinholdt, A., & Nübold, A. (2015). A low-dose mindfulness intervention and recovery from work: Effects on psychological detachment, sleep quality, and sleep duration. *Journal of Occupational and Organizational Psychology*, 88, 464–489.
- Kang, S.-G., Kang, J. M., Ko, K.-P., Park, S.-C., Mariani, S., & Weng, J. (2017). Validity of a commercial wearable sleep tracker in adult insomnia disorder patients and good sleepers. *Journal of Psychosomatic Research*, 97, 38–44.
- Kaplan, S., Bradley-Geist, J. C., Ahmad, A., Anderson, A., Hargrove, A. K., & Lindsey, A. (2014). A test of two positive psychology interventions to increase employee well-being. *Journal of Business and Psychology*, 29, 367–380.
- Kark, R., & Carmeli, A. (2009). Alive and creating: the mediating role of vitality and aliveness in the relationship between psychological safety and creative work involvement. *Journal of Organizational Behavior*, 30, 785–804.
- Keech, J. J., Hagger, M. S., & Hamilton, K. (2019). Changing stress mindsets with a novel imagery intervention: A randomized controlled trial. *Emotion*. <https://doi.org/10.1037/emo0000678>
- Kirtley, J., & O’Mahony, S. (2020). What is a pivot? Explaining when and how entrepreneurial firms decide to make strategic change and pivot. *Strategic Management Journal*, smj.3131.
- Koellinger, P., Minniti, M., & Schade, C. (2007). “I think I can, I think I can”: Overconfidence and entrepreneurial behavior. *Journal of Economic Psychology*, 28, 502–527.
- Kume, S., Nishimura, Y., Mizuno, K., Sakimoto, N., Hori, H., Tamura, Y., ... Kataoka, Y. (2017). Music improves subjective feelings leading to cardiac autonomic nervous modulation: A pilot study. *Frontiers in Neuroscience*, 11, 1–11.
- Larsson, J. P., & Thulin, P. (2019). Independent by necessity? The life satisfaction of necessity and opportunity entrepreneurs in 70 countries. *Small Business Economics*, 53, 921–934.
- Lester, R. T., Ritvo, P., Mills, E. J., Kariri, A., Karanja, S., Chung, M. H., ... Plummer, F. A. (2010). Effects of a mobile phone short message service on antiretroviral treatment adherence in Kenya (WelTel Kenya1): a randomised trial. *The Lancet*, 376, 1838–1845.
- Li, J., Riedel, N., Barrech, A., Herr, R. M., Aust, B., Mörtl, K., ... Angerer, P. (2017). Long-term effectiveness of a stress management intervention at work: A 9-year follow-up

- study based on a randomized wait-list controlled trial in male managers. *BioMed Research International*, 2017, 1–11.
- Litwiler, B., Snyder, L. A., Taylor, W. D., & Steele, L. M. (2017). The relationship between sleep and work: A meta-analysis. *Journal of Applied Psychology*, 102, 682–699.
- Lupu, I., & Empson, L. (2015). Illusio and overwork: playing the game in the accounting field. *Accounting, Auditing and Accountability Journal*, 28, 1310–1340.
- Maula, M. V. J., Autio, E., & Murray, G. C. (2009). Corporate venture capital and the balance of risks and rewards for portfolio companies. *Journal of Business Venturing*, 24, 274–286.
- Mazmanian, M., Orlikowski, W. J., & Yates, J. A. (2013). The autonomy paradox: The implications of mobile email devices for knowledge professionals. *Organization Science*, 24, 1337–1357.
- McEwen, B. S. (1993). Stress and the individual: Mechanisms leading to disease. *Archives of Internal Medicine*, 153, 2093–2101.
- McEwen, B. S. (2004). Protection and damage from acute and chronic stress: Allostasis and allostatic overload and relevance to the pathophysiology of psychiatric disorders. *Annals of the New York Academy of Sciences*, 1032, 1–7.
- McMahan, E. A., & Estes, D. (2015). The effect of contact with natural environments on positive and negative affect: A meta-analysis. *The Journal of Positive Psychology*, 10, 507–519.
- McMullen, J. S. (2015). Entrepreneurial judgment as empathic accuracy: a sequential decision-making approach to entrepreneurial action. *Journal of Institutional Economics*, 11, 651–681.
- Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. D. Drenth, H. Thierry, & C. J. de Wolff (Eds.), *A Handbook of Work and Organizational Psychology: Work Psychology* (2nd ed., pp. 5–34). Sussex, England: Psychology press.
- Michel, A. (2014). Participation and self-entrapment a 12-year ethnography of wall street participation practices' diffusion and evolving consequences. *Sociological Quarterly*, 55, 514–536.
- Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science*, 6, 6–42.
- Mitchell, M. S., Greenbaum, R. L., Vogel, R. M., Mawritz, M. B., & Keating, D. J. (2019). Can you handle the pressure? The effect of performance pressure on stress appraisals, self-regulation, and behavior. *Academy of Management Journal*, 62, 531–552.
- Monat, A., Averill, J. R., & Lazarus, R. S. (1972). Anticipatory stress and coping reactions under various conditions of uncertainty. *Journal of Personality and Social Psychology*, 24, 237–253.
- Muraven, M., Gagné, M., & Rosman, H. (2008). Helpful self-control: Autonomy support, vitality, and depletion. *Journal of Experimental Social Psychology*, 44, 573–585.
- Murnieks, C. Y., Arthurs, J. D., Cardon, M. S., Farah, N., Stornelli, J., & Michael Haynie, J. (2020). Close your eyes or open your mind: Effects of sleep and mindfulness exercises on entrepreneurs' exhaustion. *Journal of Business Venturing*, 35, 105918.
- Newlin, A. M. B. (2020). More specific than “small”: Identifying key factors to account for the heterogeneity in stress findings among small businesses. In P. L. Perrewé, P. D. Harms, & C.-H. Chang (Eds.), *Entrepreneurial and Small Business Stressors, Experienced Stress, and Well-Being* (18th ed., pp. 95–122). Emerald Publishing Limited.
- O'Shea, D., O'Connell, B. H., & Gallagher, S. (2016). Randomised controlled trials in WOHP interventions: A review and guidelines for use. *Applied Psychology*, 65, 190–222.

- OSHA. (2021). Occupational Safety and Health Administration. Retrieved from <https://www.osha.gov/laws-regs>
- Pakhomov, S. V. S., Thuras, P. D., Finzel, R., Eppel, J., & Kotlyar, M. (2020). Using consumer-wearable technology for remote assessment of physiological response to stress in the naturalistic environment. *PLOS ONE*, 15, e0229942.
- Passmore, H.-A., & Holder, M. D. (2017). Noticing nature: Individual and social benefits of a two-week intervention. *The Journal of Positive Psychology*, 12, 537–546.
- Patel, P. C., Wolfe, M. T., & Williams, T. A. (2019). Self-employment and allostatic load. *Journal of Business Venturing*, 34, 731–751.
- Patzelt, H., & Shepherd, D. A. (2011). Negative emotions of an entrepreneurial career: Self-employment and regulatory coping behaviors. *Journal of Business Venturing*, 26, 226–238.
- Pérez-Zapata, O., Pascual, A. S., Alvarez-Hernández, G., & Collado, C. C. (2016). Knowledge work intensification and self-management: The autonomy paradox. *Work Organisation, Labour and Globalisation*, 10, 27–49.
- Puterman, E., Weiss, J., Beauchamp, M. R., Mogle, J., & Almeida, D. M. (2017). Physical activity and negative affective reactivity in daily life. *Health Psychology*, 36, 1186–1194.
- Rauch, A., Fink, M., & Hatak, I. (2018). Stress processes: An essential ingredient in the entrepreneurial process. *Academy of Management Perspectives*, 32, 340–357.
- Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology*, 16, 353–385.
- Rauch, A., & Hulsink, W. (2015). Putting entrepreneurship education where the intention to act lies: An investigation into the impact of entrepreneurship education on entrepreneurial behavior. *Academy of Management Learning & Education*, 14, 187–204.
- Real, E., Jover, L., Verdaguer, R., Griera, A., Segalàs, C., Alonso, P., ... Menchón, J. M. (2016). Factors associated with long-term sickness absence due to mental disorders: A cohort study of 7.112 patients during the Spanish Economic Crisis. *PLOS ONE*, 11, e0146382.
- Reed, J., & Buck, S. (2009). The effect of regular aerobic exercise on positive-activated affect: A meta-analysis. *Psychology of Sport and Exercise*, 10, 581–594.
- Renko, M. (2013). Early challenges of nascent social entrepreneurs. *Entrepreneurship: Theory and Practice*, 37, 1045–1069.
- Ryan, R. M., & Deci, E. L. (2008). From Ego Depletion to Vitality: Theory and Findings Concerning the Facilitation of Energy Available to the Self. *Social and Personality Psychology Compass*, 2, 702–717.
- Ryan, R. M., & Frederick, C. (1997). On Energy, Personality, and Health: Subjective Vitality as a Dynamic Reflection of Well-Being. *Journal of Personality*, 65, 529–565.
- Sanders, E. B.-N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. *CoDesign*, 4, 5–18.
- Schakel, L., Veldhuijzen, D. S., Manai, M., Beugen, S. van, Vaart, R. van der, Middendorp, H. van, & Evers, A. W. M. (2019). Optimizing healthy food preferences by serious gaming. *Psychology & Health*, 0, 1–20.
- Scheerman, J. F. M., Hamilton, K., Sharif, M. O., Lindmark, U., & Pakpour, A. H. (2020). A theory-based intervention delivered by an online social media platform to promote oral health among Iranian adolescents: a cluster randomized controlled trial. *Psychology & Health*, 35, 449–466.

- Schermuly, C. C., Wach, D., Kirschbaum, C., & Wegge, J. (2020). Coaching of insolvent entrepreneurs and the change in coping resources, health, and cognitive performance. *Applied Psychology*, 0, apps.12244.
- Shane, S. A., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *The Academy of Management Review*, 25, 217–226.
- Shepherd, D. A., Patzelt, H., & Wolfe, M. T. (2011). Moving forward from project failure: Negative Emotions, affective commitment, and learning from the experience. *The Academy of Management Journal*, 54, 1229–1259.
- Shir, N. (2015). Entrepreneurial well-being: The payoff structure of business creation (Stockholm School of Economics, Stockholm, Sweden). Stockholm School of Economics, Stockholm, Sweden.
- Shir, N., Nikolaev, B. N., & Wincent, J. (2019). Entrepreneurship and well-being: The role of psychological autonomy, competence, and relatedness. *Journal of Business Venturing*, 34, 105875.
- Shirom, A. (2011). Vigor as a Positive Affect at Work: Conceptualizing Vigor, Its Relations with Related Constructs, and Its Antecedents and Consequences. *Review of General Psychology*, 15, 50–64.
- Smith, E. N., Santoro, E., Moraveji, N., Susi, M., & Crum, A. J. (2020). Integrating wearables in stress management interventions: Promising evidence from a randomized trial. *International Journal of Stress Management*, 27, 172–182.
- Snihur, Y., & Zott, C. (2020). The genesis and metamorphosis of novelty imprints: How business model innovation emerges in young ventures. *Academy of Management Journal*, 63, 554–583.
- Sonnentag, S. (2018). The recovery paradox: Portraying the complex interplay between job stressors, lack of recovery, and poor well-being. *Research in Organizational Behavior*. <https://doi.org/10.1016/j.riob.2018.11.002>
- Sonnentag, S., & Fritz, C. (2007). The Recovery Experience Questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology*, 12, 204–221.
- Sonnentag, S., Venz, L., & Casper, A. (2017). Advances in recovery research: What have we learned? What should be done next? *Journal of Occupational Health Psychology*, 22, 365–380.
- Spijkerman, M. P. J., Pots, W. T. M., & Bohlmeijer, E. T. (2016). Effectiveness of online mindfulness-based interventions in improving mental health: A review and meta-analysis of randomised controlled trials. *Clinical Psychology Review*, 45, 102–114.
- Spivack, A. J., McKelvie, A., & Haynie, J. M. (2014). Habitual entrepreneurs: Possible cases of entrepreneurship addiction? *Journal of Business Venturing*, 29, 651–667.
- Stam, W., Arzlanian, S., & Elfring, T. (2014). Social capital of entrepreneurs and small firm performance: A meta-analysis of contextual and methodological moderators. *Journal of Business Venturing*, 29, 152–173.
- Stephan, U. (2018). Entrepreneurs' mental health and well-being: a review and research agenda. *The Academy of Management Perspectives*, 32, amp.2017.0001.
- Stephan, U., Tavares, S. M., Carvalho, H., Ramalho, J. J. S., Santos, S. C., & van Veldhoven, M. (2020). Self-employment and eudaimonic well-being: Energized by meaning, enabled by societal legitimacy. *Journal of Business Venturing*, 35, 106047.
- Stevenson, R. M., Josefy, M. A., McMullen, J. S., & Shepherd, D. A. (2020). Organizational and management theorizing using experiment-based research: Covered terrain and new frontiers. *Academy of Management Annals*, annals.2018.0152.
- Syme, S. L. (2004). Social determinants of health: the community as an empowered partner. *Preventing Chronic Disease*, 1, A02–A02.

- Syrek, C. J., Weigelt, O., Kühnel, J., & de Bloom, J. (2018). All I want for Christmas is recovery – changes in employee affective well-being before and after vacation. *Work & Stress*, 32, 313–333.
- Taris, T. W., Geurts, S. A. E., Schaufeli, W. B., Blonk, R. W. B., & Lagerveld, S. E. (2008). All day and all of the night: The relative contribution of two dimensions of workaholism to well-being in self-employed workers. *Work & Stress*, 22, 153–165.
- Thayer, R. E. (1996). *The origin of everyday moods: Managing energy, tension, and stress*. Oxford University Press, New York.
- Torgerson, D. J., & Torgerson, C. J. (2008). *Designing randomised trials in health, education and the social sciences*. London: Palgrave Macmillan UK.
- Valshtein, T. J., Oettingen, G., & Gollwitzer, P. M. (2020). Using mental contrasting with implementation intentions to reduce bedtime procrastination: two randomised trials. *Psychology & Health*, 35, 275–301.
- Van Berkel, J., Boot, C. R. L., Proper, K. I., Bongers, P. M., & Van Der Beek, A. J. (2014). Effectiveness of a worksite mindfulness-related multi-component health promotion intervention on work engagement and mental health: Results of a randomized controlled trial. *PLoS ONE*, 9. <https://doi.org/10.1371/journal.pone.0084118>
- van Berkel, J., Proper, K. I., Boot, C. R., Bongers, P. M., & van der Beek, A. J. (2011). Mindful “Vitality in Practice”: an intervention to improve the work engagement and energy balance among workers; the development and design of the randomised controlled trial. *BMC Public Health*, 11, 736.
- van Gelderen, M. (2016). Entrepreneurial autonomy and its dynamics. *Applied Psychology*, 65, 541–567.
- van Gelderen, M., & Jansen, P. (2006). Autonomy as a start - up motive. *Journal of Small Business and Enterprise Development*, 13, 23 – 32.
- Wach, D., Stephan, U., Weinberger, E., & Wegge, J. (2020). Entrepreneurs’ stressors and well-being: A recovery perspective and diary study. *Journal of Business Venturing*, 19, 106016.
- Wallerstein, N., Duran, B., Oetzel, J. G., & Minkler, M. (2018). *Community-based participatory research for health: advancing social and health equity (3rd ed.)*. San Francisco, CA: San Francisco, CA: Jossey-Bass.
- Wei, X., Cang, S., & Hisrich, R. D. (2015). Entrepreneurial stressors as predictors of entrepreneurial burnout. *Psychological Reports*, 116, 74-88.
- Weinberger, E., Wach, D., Stephan, U., & Wegge, J. (2018). Having a creative day: Understanding entrepreneurs’ daily idea generation through a recovery lens. *Journal of Business Venturing*, 33, 1–19.
- Welter, F., Baker, T., Audretsch, D. B., & Gartner, W. B. (2017). Everyday entrepreneurship— A call for entrepreneurship research to embrace entrepreneurial diversity. *Entrepreneurship Theory and Practice*, 41, 311–321.
- Wendsche, J., & Lohmann-Haislah, A. (2017). A Meta-Analysis on Antecedents and Outcomes of Detachment from Work. *Frontiers in Psychology*, 7. <https://doi.org/10.3389/fpsyg.2016.02072>
- Wiklund, J., Nikolaev, B. N., Shir, N., Foo, M.-D., & Bradley, S. (2019). Entrepreneurship and well-being: Past, present, and future. *Journal of Business Venturing*, 34, 579–588.
- Wiklund, J., Wright, M., & Zahra, S. A. (2019). Conquering relevance: Entrepreneurship research’s grand challenge. *Entrepreneurship Theory and Practice*, 43, 419–436.
- Williams, D. W., Wood, M. S., Mitchell, J. R., & Urbig, D. (2019). Applying experimental methods to advance entrepreneurship research: On the need for and publication of experiments. *Journal of Business Venturing*, 34, 215–223.

- Williamson, A. J., Battisti, M., Leatherbee, M., & Gish, J. J. (2019). Rest, Zest, and My Innovative Best: Sleep and Mood as Drivers of Entrepreneurs' Innovative Behavior. *Entrepreneurship Theory and Practice*, 43, 582–610.
- Williamson, A. J., Drencheva, A., & Battisti, M. (in-press). Entrepreneurial Disappointment: Let down and breaking down, a machine-learning study. *Entrepreneurship Theory and Practice*, 104225872096444.
- Wincent, J., & Örtqvist, D. (2009). A comprehensive model of entrepreneur role stress antecedents and consequences. *Journal of Business and Psychology*, 24, 225-243.
- Wincent, J., Örtqvist, D., & Drnovsek, M. (2008). The entrepreneur's role stressors and proclivity for a venture withdrawal. *Scandinavian Journal of Management*, 24, 232-246.
- Winter, D. (2020). 9 self-care strategies for busy entrepreneurs.
- Wolfe, M. T., & Patel, P. C. (2019). I will sleep when I am dead? Sleep and self-employment. *Small Business Economics*. <https://doi.org/10.1007/s11187-019-00166-5>
- Zheng, M. X., Yao, J., & Narayanan, J. (2020). Mindfulness buffers the impact of COVID-19 outbreak information on sleep duration. <https://doi.org/10.31234/osf.io/wuh94>

### Tables and Figures

**Table 1: Approaches to resource renewal through recovery among entrepreneurs**

Approach	Outcome	Authors
Sleep efficiency	Enhanced creativity	Weinberger et al. (2018)
Sleep quality	Positive mood, and in turn, enhanced innovative behavior	Williamson et al. (2019)
Sleep quantity and quality	Higher effectiveness in imagining promising entrepreneurial ideas, and in forming initial beliefs about the attractiveness of such ideas	Gish et al. (2019)
Psychological detachment from work	Enhanced well-being	Wach et al. (2020)
Psychological detachment from work	Reduced exhaustion and psychosomatic complaints; and enhanced professional efficacy	Taris et al. (2008)
Mindfulness exercises or sleep	Reduced exhaustion	Murnieks et al. (2020)
Loving-kindness meditation	More self-compassion, and in turn, less fear of failure in the face of obstacles than a control group	Engel et al. (2020)
Loving-kindness meditation	More compassion, and in turn, greater prioritization of the environment in decisions	Engel, Ramesh, and Steiner (2020)
Receiving coaching (insolvent entrepreneurs)	Improved quality of life perception, and vigilance (Rapid Visual Information Processing), and decreased vital exhaustion. Stress hormone unchanged.	Schermuly et al. (2020)

**Table 2: Person-based recovery interventions to inspire research on entrepreneurial recovery: The ‘three R’s of entrepreneurial recovery interventions**

Intervention focus	Intervention category	Example interventions and effects	Author(s)
Respite	Breaks	Microbreaks of only 5 to 10 minutes restore energy and attention at work, boosting productivity later in the workday.	Bennett et al. (2020)
	Nature	Meta-analytic findings support that spending time in nature enhances positive moods and, to a lesser extent, decreases negative moods. Reflections on time spent in natural environments raise positive moods and prosocial motivations. Spending at least 120 minutes per week in a natural setting increases health and well-being.	McMahan & Estes (2015) Passmore and Holder (2017)
	Socializing	Low social activity during non-work times harms recovery efforts.	Fritz & Sonnentag (2005)
	Music	Early evidence suggests that relaxing music diminishes feelings of fatigue and lowers heart rates.	Kume et al. (2017)
	Mindfulness	Mindfulness meditation enables psychological detachment from work and increases sleep quality and quantity. Mindfulness diminishes the prevalence of work-based exhaustion for entrepreneurs. <sup>5</sup>	Hülshager et al. (2015) Murnieks et al. (2020)
	Positive reflections	Daily positive work reflections diminish emotional exhaustion and fatigue for individuals with a high need for recovery. Journaling on gratitude improves several well-being outcomes, with positive mood showing the most consistent gains.	Clauss et al. (2018) Kaplan et al. (2014) Emmons and McCullough (2003)

<sup>5</sup> Even though mindfulness related training may produce short term effects, it has shown mixed or no effects after six months (Van Berkel, Boot, Proper, Bongers, & Van Der Beek, 2014).

Intervention focus	Intervention category	Example interventions and effects	Author(s)
Reappraisal	Cognitive-behavioral therapy (CBT)	CBT training for managers, restructuring cognitions and behaviors about over-commitment at work, lowers long-term stress and depression. Insomniacs use an online CBT intervention for subjects experiencing sleeplessness. Ameliorating insomnia leads to better at-work performance outcomes.	Barnes et al. (2017)
		Applied behavioral training for professionals conducted in groups, teaching applied relaxation techniques plus how and why to psychologically deactivate after a period of stress responses.	Almén et al. (2020)
	Stress optimization	Training to optimize stress (instead of attempting to reduce it) by harnessing it, with stress regulation techniques.	Keech et al. (2019) Crum et al. (2020)
	Experimental disclosure	Expressive writing about thoughts and feelings on personally meaningful topics begets greater psychological health, physiological functioning, and other health outcomes.	Frattaroli (2006)
Regimen	Sleep hygiene	Regimented mental contrasting, coupled with implementation intentions, can outshine sleep procrastination and change bedtime behaviors. Those who suffer from insomnia can revise their cognitions and behaviors to combat sleeplessness.	Valshtein et al. (2020) Barnes et al. (2017)
	Exercise	A regular exercise regimen increases both short- and long-term sleep quality, work performance, and self-reported cognitive functioning. Exercising in natural settings (i.e., green exercise) improves self-esteem, mood, and self-reported mental health.	de Vries et al. (2017) Barton & Pretty (2010) Brown et al. (2014)
	Break training	Structured disengagement from work promotes greater self-efficacy, better sleep quality, lower perceived stress, and better moods. Micro-breaks between work tasks restore resources to baseline levels.	Hahn et al. (2011) Bennett et al. (2020)

**Table 3: Ten suggestions for rigorous entrepreneurial recovery interventions**

Key consideration	More detail
1. Allocate randomly	Randomly assign participants to treatment conditions using <i>true</i> random allocation techniques, like fixed-number random number generator methods, sealed envelopes with treatment conditions named inside, and fixed-number computerized coin toss methods. Someone who is not involved with delivering the intervention should perform the allocation.
2. Avoid imbalances between treatment groups with stratified randomization	Prevent (where possible) imbalances between treatment groups due to covariates, by employing stratified randomization techniques. Stratified randomization pools similar participants together then randomizes from within each pool of participants. This approach reduces statistical power, but helps prevent an imbalance in intervention responsiveness that can bias the results. For example, entrepreneurs who are associated with a single accelerator may be similar across many criteria (compared to other accelerators), thus to avoid imbalances that may occur as a function of the accelerator, participants within the same accelerator can be allocated between treatment groups.
3. Assign participants to one condition	Give participants a similar chance of being allocated to only one group by using a parallel-group design. A parallel-group design is a between-subject design that allocates participants to a single condition. Alternative designs include crossover designs, where participants are allocated to different conditions at a random sequence (e.g., two weeks of the control condition, two weeks with a mindful intervention) and cluster designs where established pools of participants are allocated to a different treatment group (e.g., entrepreneurs at accelerator A compared to accelerator B). Parallel-group designs reduce issues with attrition and reduce the possibility for confounds, which are problems that occur with the aforementioned approaches. Ideally, participants are allocated evenly between groups, but there is evidence to suggest that group sizes can differ up to a ratio of 2:1 (Torgerson & Torgerson, 2008). To achieve the desired ratio of participants between conditions, researchers should randomly allocate participants close to the date of the intervention, to prevent imbalance due to attrition.
4. Conceal allocation and blind researchers to outcomes	Conceal allocation between treatment groups from researchers, and if possible, participants. Researchers involved with the intervention should not be aware of how participants are allocated to groups, to prevent bias in allocation decisions. During the intervention, ideally, researchers and participants are blind to the treatment conditions also, such that neither knows which is the treatment nor control (double-blind), but this may not be practical for researchers performing recovery interventions. Therefore, researchers should make all efforts to maintain similar procedures and treatment (except for the intervention) for all experimental conditions, such that neither condition gains any advantages. To reduce bias further, researchers may consider using a third party to collect follow-up data relating to the outcome of the intervention.
5. Collect demographic data	Determine if treatment conditions have any covariates, and therefore bias, by measuring demographic details (e.g., entrepreneurial experience, age, and gender). Researchers can measure and control for chance imbalance in the data, during the data analysis stage, by measuring demographic variables up-front (Deaton & Cartwright, 2018).
6. Determine an appropriate control	Consider suitable control conditions for intervention studies. Unlike pharmaceutical trials, recovery interventions lack obvious control allocations. The gold standard is a placebo-controlled design, which is when the control condition appears to be like the treatment, but

condition and include a manipulation check	has an important key difference (Boot, Simons, Stothart, & Stutts, 2013). For example, Brown et al., (2014) examined the difference between lunchtime walking in <i>nature</i> , with lunchtime walking in industrial areas (as well as no walking at all). Less robust alternatives include using an active control, which requires participants to engage in an activity during the duration of the intervention time (e.g., watching TED talks; Engel, Noordijk, et al., 2020). Moreover, researchers can use a no-contact control, which means they engage in no activity, or a waitlist control, where participants have the expectation that they will participate in the experimental condition later (Boot et al., 2013). Include a manipulation check, e.g., the subjective feeling of being recovered (Binnewies, Sonnentag, & Mojza, 2009) to ascertain the effectiveness of the intervention and control group treatment.
7. Measure recovery outcomes in multiple ways and include pre-tests	Outcome variables related to recovery are not straightforward to measure. Scholars indicate that employing primary and secondary outcome measures (van Berkel, Proper, Boot, Bongers, & van der Beek, 2011), and different forms of measurement is the best available option to researchers (Clark-Carter & Marks, 2018). Emmons and McCullough (2003) achieved this by comparing the impact of gratitude on both well-being ratings and physical experiences. Include pre-intervention measures of recovery outcomes to ascertain the magnitude of the intervention effect. To control for possible biases due to pre-measures consider a Solomon 4 group design (a parallel design with four groups where one treatment and one control group include pre-measures).
8. Plan for and achieve sufficient power	To avoid resource wastage, researchers should determine the expected effect of an intervention (by examining past studies) and estimate the number of participants needed for an intervention accounting for attrition effects during follow-up. Small sample sizes can produce false negatives (type II errors), and large sample sizes are costly. Ex-ante statistical power and sample size requirement can be estimated using software such as GPower <sup>6</sup> .
9. Recruit entrepreneurs from the target population	Recruit participants who are representative of the desired population, to ensure the generalizability of the research findings. We have highlighted that the nature of entrepreneurial stressors can differ according to circumstance, which suggests that the sensitivity to recovery interventions may differ between subpopulations of entrepreneurs also. We encourage researchers to be deliberate in their sample design to account for heterogeneity in entrepreneurial groups and to note limitations around generalizability when reporting their findings.
10. Report plan and results rigorously	Researchers should be explicit and detailed in all aspects of planning and reporting interventions. Studies can be pre-registered on sites such as the Open Science Framework <sup>7</sup> . One key guideline to follow is the CONSORT statement for reporting interventions, which can be found freely online <sup>8</sup> (for a discussion on why this is important, see: O’Shea et al., 2016).

<sup>6</sup> GPower [www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower.html](http://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower.html)

<sup>7</sup> Open Science Framework <https://osf.io/sgrk6/>

<sup>8</sup> CONSORT <http://www.consort-statement.org/>

**Figure 1: A framework for entrepreneurial recovery interventions**

