



Perspectives

Entrepreneurs' Mental Health and Well-Being: A Review and Research Agenda

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7 **ENTREPRENEURS' MENTAL HEALTH AND WELL-BEING:**

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9 **A REVIEW AND RESEARCH AGENDA**

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43
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ENTREPRENEURS' MENTAL HEALTH AND WELL-BEING:

A REVIEW AND RESEARCH AGENDA

Abstract

Interest in entrepreneurs' mental health and well-being (MWB) is growing in recognition of the role of MWB in entrepreneurs' decision-making, motivation and action. Yet relevant knowledge is dispersed across disciplines, which makes it unclear what we currently understand about entrepreneurs' MWB. In this systematic review I integrate insights from 144 empirical studies. These studies show that research is focused on three research questions: (1) Do different types of entrepreneur differ in their MWB? What are the (2) antecedents and (3) consequences of entrepreneurs' MWB? The review systematizes evidence on known antecedents and consequences of entrepreneurs' MWB but also reveals overlooked and undertheorized sources and outcomes of entrepreneurs' MWB. The review provides a mapping and framework that advance research on entrepreneurs' MWB and help to position entrepreneurs' MWB more centrally in management and entrepreneurship research. It calls for researchers to go beyond applying models developed for employees to understand entrepreneurs' MWB. Instead, the findings point the way to developing a dedicated theory of entrepreneurial work and MWB that is dynamic, socialized, open to considering context, and acknowledges variability and fluidity across entrepreneurs' life domains, as well as the centrality of work for entrepreneurs' identity.

Keywords: review, well-being, mental health, entrepreneurship, work design, context, personality

Entrepreneurs' Mental Health and Well-Being: A Review and Research Agenda

Entrepreneurs create jobs and contribute to economic productivity and growth (see Van Praag & Versloot, 2008 for a review). They are an essential element of dynamic economies. While the economic benefits of entrepreneurial activity are clear, the outcomes for the individual entrepreneur appear paradoxical. Being an entrepreneur has been characterized as one of the most stressful jobs (Cardon & Patel, 2015; Patzelt & Shepherd, 2011), with average earnings that are lower than if entrepreneurs were to work as paid employees (Van Praag & Versloot, 2008). Despite this, entrepreneurs report being extremely happy in their work and highly satisfied with their life (Benz & Frey, 2004; Stephan & Roesler, 2010). Why might this be? What do we know about the sources of entrepreneurs' mental health and well-being? Why, and for what outcomes, does the mental health and well-being of entrepreneurs matter?

Mental health is defined by the World Health Organization (WHO) as not merely the absence of mental health problems but as a "state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community." (WHO, 2014). Mental health and well-being (MWB) are traditionally researched in psychology, medicine, and public health, but are receiving increasing attention in other disciplines. An example of this broader interest is the effort to develop national well-being accounts (e.g., 'Beyond GDP', European Commission, 2016; Stiglitz, Sen, & Fitoussi, 2009). To most people, MWB is a valued outcome in its own right - we want to be 'happy' - and we perform better when we are feeling well (Lyubomirsky, King, & Diener, 2005).

MWB is central to effective human functioning (Ryan & Deci, 2001; Ryff, 2017) and entrepreneurs are no exception. 'Happy' entrepreneurs are more likely to persist and perform better (e.g., Wincent, Örtqvist, & Drnovsek, 2008). High MWB is an ongoing benefit that entrepreneurs derive from their work and, at least in part, generate through their work.

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Entrepreneurs may make financially costly decisions, such as delaying business failure, to protect their well-being (Shepherd, Wiklund, & Haynie, 2009), they value MWB and see it as an indicator of their success (Wach, Stephan, & Gorgievski, 2016). Thus, research on entrepreneurs' MWB is critical to understanding entrepreneurial action, decision-making, and motivation (e.g., Shepherd & Patzelt, 2015) and ultimately helps to sustain the economic and societal benefits of entrepreneurship.

For all these reasons, interest in entrepreneurs' MWB is growing. Even though it found its way into the entrepreneurship journals only relatively recently¹, a substantial body of relevant research on entrepreneurs' MWB exists in other disciplines, such as organizational psychology, economics, and occupational health research. For instance, organizational psychologists investigate predictors of entrepreneurs' MWB and have linked the level of MWB to performance (Gorgievski & Stephan, 2016). Economists see well-being as a way of understanding the non-monetary returns of entrepreneurship (Van Praag & Versloot, 2008). Occupational health research seeks to document the health risks associated with occupations including entrepreneurship, often through epidemiological studies.

However, there is little exchange across disciplines, and the research on entrepreneurs' MWB remains fragmented. This means there is no shared base of knowledge and only piecemeal theorizing on entrepreneurs' MWB. We lack an overview of the antecedents and consequences of entrepreneurs' MWB, and the extent to which they are underpinned by robust evidence. Parallel lines of inquiry exist, but without an integrative framework they can give the impression of confusing findings as to the nature of entrepreneurs' MWB. The purpose of this review is to take stock, outline areas of consensus,

¹ The review identified four publication on entrepreneurs' MWB in entrepreneurship journals between 1950 and 2010, and 22 since then (up to June 2017).

1
2
3 identify conflicting findings, highlight gaps in our knowledge, and develop a framework for
4
5 research on entrepreneurs' MWB.

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7 By synthesizing evidence from 144 empirical studies that I identified through a
8
9 systematic review approach (Tranfield, Denyer, & Smart, 2003), the review provides a
10
11 platform and framework for future research by integrating what we know about
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13 entrepreneurs' MWB. In doing so, it advances research on entrepreneurs' MWB and helps to
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15 position it more centrally in management and entrepreneurship research. Specifically, the
16
17 review findings identify new overlooked antecedents (entrepreneurs' motivation, their human
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19 capital, firm and financial characteristics, the market and social context) and consequences
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21 (for others around the entrepreneur and possibly for collectives) of entrepreneurs' MWB. The
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23 review also documents evidence on known antecedents (work, personality and social
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25 characteristics) and consequences (persistence, performance and work behaviors) of
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27 entrepreneurs' MWB.
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31 Building upon these findings, the review points the way to developing a new
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33 dedicated theory of entrepreneurial work and MWB. This theory goes beyond the models
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35 developed for employees that have to date dominated research on entrepreneurs' MWB while
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37 failing to take account of the uniqueness of entrepreneurship. Instead it offers and encourages
38
39 a much more dynamic, socialized and contextualized view of entrepreneurs' work and their
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41 MWB. It acknowledges heterogeneity among entrepreneurs and pays tribute to entrepreneurs'
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43 fluid and variable work-life settings, the centrality of work for their identity, the importance
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45 of other individuals within and outside of their firm, and the critical impact of market and
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47 country contexts on entrepreneurs' work and MWB.
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50 51 **Background to the Review**

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53 First, I will clarify the key concepts of the review: namely, entrepreneurship, mental health
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55 and well-being. I will then introduce the main perspectives for this research.
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Entrepreneurship

Entrepreneurship is often understood as 'new entry', i.e., the creation of a new venture (e.g., Gartner, 1989), or more broadly as an occupational choice of individuals to work for themselves on 'their own account and risk' (Hébert & Link, 1982). The latter definition includes self-employment and is commonly used in research on well-being and entrepreneurship (Gorgievski & Stephan, 2016). It also guides this review. The presentation of the findings distinguishes types of entrepreneurs where possible.

Mental Health and Well-being

The reviewed literature used, with varying meanings, terms such as mental health, psychological or subjective well-being, and distress. The WHO definition illustrates that mental health and well-being (henceforth 'mental well-being' or 'MWB') may be understood as a continuum; and this understanding underpins the review. At one end, we find *mental health problems*, or ill-being, such as affective, anxiety and personality disorders (e.g., major depression, generalized anxiety disorder)² that impair individuals' daily functioning; as well as less severe *feelings of distress* (e.g., feeling anxious, tense, sad, or 'down') that reduce individuals' quality of life. At the other end, we find *well-being* i.e. the experience of "living in a state that is in some sense good" (Warr, 2013, p. 77), characterized by feelings of satisfaction, happiness or "optimal psychological functioning and experience" (Ryan & Deci, 2001, p.142). Two types of well-being are often differentiated.

Hedonic well-being refers to happiness in terms of attaining pleasure and avoiding pain (Kahneman, Diener, & Schwarz, 1999; Ryan & Deci, 2001). It has three components: life satisfaction; the presence of positive affect, and the absence of negative affect (Diener, Suh, Lucas, & Smith, 1999). While affect is emotion-based, life satisfaction contains a

² For the full description of all mental disorders see the Diagnostic and Statistical Manual of Mental Disorders (DSM) or the International Statistical Classification of Diseases and Related Health Problems (ICD, chapter 5).

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3 cognitive, evaluative component.³ *Eudaimonic well-being* entails meaning, self-realization,
4 the 'degree to which a person is fully functioning', feels alive, 'thriving' and authentic (Ryan
5 & Deci, 2001). It is related to resilience and adaptability in adverse situations (Ryff, 2017).
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9 Eudaimonic well-being stems, for instance, from succeeding in effortful, self-determined
10 activities (Ryan & Deci, 2001; Ryff, 2017), a description that seemingly fits entrepreneurship
11 well. It goes beyond experiencing feelings of satisfaction and pleasure derived from
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16 achieving valued outcomes or goals, which are characteristic of hedonic well-being.

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18 MWB can be measured at varying levels of abstraction. *General MWB* describes
19 broad tendencies over time that are not related to a specific life domain, object, or event.
20
21 *Domain-specific* indicators such as work-related affect and job satisfaction are often used in
22 research on entrepreneurs. Life satisfaction as a general indicator is positively related to
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27 satisfaction with domains such as work, family or leisure time (Bowling, Eschleman, &
28 Wang, 2010). For entrepreneurs, job satisfaction is more closely related to satisfaction with
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31 life, family and self than it is for employees, reflecting the centrality of work in their life
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33 (Loewe, Araya-Castillo, Thieme, & Batista-Foguet, 2015; Thompson, Kopelman, &
34 Schriesheim, 1992).
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37 The presentation of review findings differentiates indicators of MWB including
38 mental disorders, distress, hedonic and eudaimonic well-being as well as general and domain-
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40
41 specific indicators as much as possible. The online supplement contains further detail.
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44 **Dominant Perspectives on Entrepreneurs' MWB in Current Research**

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48 ³ The terms emotions and well-being are sometimes used interchangeably in the literature. Thus, a clarification
49 seems in order. The different forms of MWB described above and covered in this review are distinct from but
50 related to emotions. In contrast to MWB, emotions are situation-specific reactions and relatively short lived. A
51 range of emotions with similar valence underlie positive and negative affect respectively (Ashkanasy & Dorris,
52 2017). Day-to-day emotional experiences can be seen as micro-foundations of MWB; they underpin and
53 aggregate up to more general, longer-lasting experiences of distress and (hedonic) well-being. Studies exploring
54 emotions as micro-foundations of MWB are included in the review. Yet emotions are an important research area
55 in their own right (Ashkanasy & Dorris, 2017) including in entrepreneurship (Cardon, Foo, Shepherd, &
56 Wiklund, 2012). A review of research on emotions and entrepreneurship falls outside the scope of this review.
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3 Research on entrepreneurs' MWB has been primarily conducted from organizational
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5 psychology, economics, and occupational health perspectives. Although their emphasis
6
7 varies, these three perspectives take as their starting point salaried employees, and they then
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9 highlight differences in the nature and quality of work of entrepreneurs. Similar arguments
10
11 are found in entrepreneurship research. They emphasize that entrepreneurs face working
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13 conditions that are more extreme than those of salaried employees, including higher levels of
14
15 uncertainty, responsibility, and complexity; more intense time pressures; and longer working
16
17 hours. These work characteristics are *stressors* because individuals typically experience them
18
19 as overwhelming and appraise them as threatening (Lazarus & Folkman, 1984). Occupational
20
21 health and psychological research has established the detrimental effects of these stressors for
22
23 employees' MWB (Hausser, Mojzisch, Niesel, & Schulz-Hardt, 2010; Humphrey, Nahrgang,
24
25 & Morgeson, 2007; Parker, 2014) and expects similar effects on entrepreneurs' MWB.
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29 Entrepreneurs are also seen to have significantly higher *autonomy or job control* than
30
31 employees. They can choose the type and content of their work, have freedom over how to
32
33 organize and schedule their tasks, and have no superiors to answer to. High autonomy can
34
35 shape how job stressors are experienced, namely as less threatening, stressful or straining
36
37 (Hausser et al., 2010). For example, high autonomy allows one to alleviate time pressure by
38
39 rescheduling tasks. Research on employees links job autonomy with eudaimonic well-being
40
41 because it allows individuals to focus on meaningful activities that develop their skills
42
43 (Parker, 2014). The economic perspective similarly highlights autonomy as both a key benefit
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45 of entrepreneurship that attracts individuals to become entrepreneurs; and a source of well-
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47 being (cf. 'procedural utility'⁴, e.g., Benz & Frey, 2004).
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55 ⁴ Procedural utility suggests that people do not only care about instrumental outcomes, e.g., income, but also
56 value the way they obtain outcomes, e.g. having a say over how to conduct their work (job autonomy).
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3 Occupational health and psychological research also draws attention to *social*
4 *stressors and resources* as important working conditions influencing MWB (Karasek &
5 Theorell, 1990). Social support from supervisors and colleagues are key sources of
6 employees' well-being (Luchman & González-Morales, 2013), but they are rarely available
7 to entrepreneurs who have no superiors and far fewer, if any, colleagues (co-entrepreneurs).
8 Entrepreneurs' work may therefore be relatively 'lonely', lacking important sources of work-
9 related social support, which is likely detrimental to their MWB.
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18 Finally, entrepreneurs differ from salaried employees in their *personality traits*,
19 especially in traits such as self-efficacy, need for achievement (Frese & Gielnik, 2014 for an
20 overview), and psychological capital (Baron, Franklin, & Hmieleski, 2016). Thus, rather than
21 being a direct result of their work, entrepreneurs' MWB may be a reflection of self-selection
22 processes (Baron et al., 2016), such as those described in the Attraction-Selection-Attrition
23 framework (Schneider, 1987). Individuals that are more 'stress-resistant' may elect to start
24 businesses and are likely to be reinforced in their choice by stakeholders (e.g. investors). In
25 turn, they are likely to persist as entrepreneurs, because they are able to cope with the high
26 demands of their work.
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37 Researchers often focus on aspects of the above arguments to suggest MWB benefits
38 or costs for entrepreneurs. This fragmentation means that it is difficult to know what we
39 currently understand about entrepreneurs' MWB, what factors give rise to it and its
40 consequences. Hence this review takes stock of the evidence across different perspectives.
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47 **Review Method and Overview of Reviewed Studies**

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49 I followed the systematic review procedure (Tranfield et al., 2003). First, I used Web of
50 Science to retrieve sources. Web of Science covers research across disciplines (management,
51 medicine, epidemiology, occupational health, economics, and psychology), in which relevant
52 evidence is likely to be published. It also includes conference proceedings to access research
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3 before it is formally published. I used a range of keywords, specifying entrepreneurs and self-
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5 employed combined with search terms for MWB and its spectrum of facets, ranging from
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7 disorders, distress to well-being. The full set of 68 search terms is available upon request. I
8
9 searched in abstract, titles and keywords, and included sources published between 1950 and
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11 June 2017. The searches retrieved 2,121 results (in June 2017).
12

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14 Second, I coded these results for inclusion in the review, based on reading the title
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16 and abstract. Sources were considered relevant if they explored the MWB of entrepreneurs
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18 by, for example, identifying predictors of entrepreneurs' MWB or exploring its
19
20 consequences. This narrowed the search results to 301 sources. When no definite exclusion
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22 decision could be made, I erred on the side of including a source for further evaluation.
23

24
25 Third, I read the 301 papers in detail and coded their research design, the nature of the
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27 sample, the country of data collection, the theoretical approach, disciplinary background, and
28
29 key findings, as well as the concept and measure of MWB.
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32 Sources were excluded in step two and three if they mentioned well-being but referred
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34 exclusively to economic well-being, or when they mentioned that entrepreneurs were not part
35
36 of the sample. I also excluded studies that did not present separate results for entrepreneurs,
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38 such as when managers and entrepreneurs were treated as one group. To keep the review
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40 manageable, I focused on explanatory studies that offered insights into antecedents or
41
42 consequences of entrepreneurs' MWB, and on empirical studies. I included studies that
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44 compared entrepreneurs and employees only if they offered an empirical explanation for
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46 MWB differences, for instance, by measuring autonomy or personality traits. I excluded
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48 studies that merely described the MWB levels of entrepreneurs and employees. I also
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50 excluded studies of social enterprises offering mental health provision.
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53 Fourth, I conducted reference searches. I retrieved references that were mentioned in
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55 the sources but not yet included in the review. I also scanned the advanced online
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3 publications and papers published in the leading entrepreneurship journals (Journal of
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5 Business Venturing, Entrepreneurship Theory and Practice) in the last five years. Overall, I
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7 identified 144 relevant sources. Of these, three were conference proceedings, one was a book
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9 chapter, and the remainder were journal publications.

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12 Before delving into the findings, I give an overview to illustrate how past research has
13
14 studied entrepreneurs' MWB. The dominant *research approach* in the 144 studies was
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16 survey-based quantitative (90%, 8% qualitative, 3% mixed-method). The studies focussed on
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18 individuals (92%) as the level of analysis, and employed cross-sectional (67%) or
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20 longitudinal/lagged research designs (25%). Three percent (five studies) were interventions
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22 or randomized control trials. Another three studies were diary/experience sampling studies,
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24 two were case studies, and one an ethnography. In terms of levels of analyses other than the
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26 individual, 2% (three studies) focussed on the family, 2% on within-individual variation, and
27
28 2% were multi-level studies considering individuals in their country contexts. One percent
29
30 (two studies) were conducted on the country-level of analysis.

33
34 With regards to *measures of MWB*, 39% of the 144 studies included measures of
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36 mental 'ill-being' (e.g., distress, mental health complaints, burnout, mental disorders), 39%
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38 measured well-being (e.g., life satisfaction, happiness, job satisfaction), a further 15%
39
40 measured both ill- and well-being in the same study, and 7% captured 'other' measures (e.g.,
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42 Quality of Life measures that contain aspects of both psychological and physical MWB). Just
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44 over half (53%) of the studies included measures of general MWB (e.g., life satisfaction or
45
46 general distress), 27% included work-related well-being measures (e.g., job satisfaction or
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48 work-related distress), 19% included measures of both and 1% 'other' measures.

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51 I classified the *primary disciplinary approach* based on the study's theoretical
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53 background in combination with the journal where it was published. The disciplinary
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55 approaches were psychology (23%), occupational health and medicine (22%),
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3 entrepreneurship (18%), economics (16%), management (12.5%), and the remainder were
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5 other social sciences.

6 7 **Synthesis and Analysis of Review Findings**

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9 As noted above, I coded all studies in detail for a range of characteristics. This
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11 allowed me, in the first instance, to cluster studies by their *primary research question*.
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13 Sixteen studies explored MWB across different types of entrepreneur, 105 studies
14
15 investigated antecedents of MWB, and 28 studies explored the consequences of MWB. Five
16
17 of the 144 studies provided information on two research questions simultaneously. A
18
19 summary of the coding tables and each study is included in the Online Supplement. Tables
20
21 A1, A2 and A3 list all the studies on MWB and types of entrepreneurs, antecedents of
22
23 entrepreneurs' MWB, and on MBW consequences respectively.
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27 To synthesize findings in each of the three areas, I engaged in qualitative coding and
28
29 abduction. For instance, I identified common clusters of antecedents of MWB guided by my
30
31 knowledge about work, social and personality characteristics as possible antecedents of
32
33 entrepreneurs' MWB as well as guided by the 'data', i.e. the findings that emerged from the
34
35 individual studies in the review. An example of 'data-driven'/ inductive coding is the fact that
36
37 new categories of stressors and resources started to emerge from the studies. These included
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39 firm characteristics such as its financial situation and physical environment, as well as
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41 context characteristics (e.g., the level of competition, the business climate, and cultural
42
43 aspects). The coding also revealed greater differentiation of personal characteristics such as
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45 human capital and values, in addition to traits. I similarly employed qualitative coding and
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47 abduction to cluster studies on the different consequences of entrepreneurs' MWB, and on the
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49 types of entrepreneurs and their MWB.
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56 **Review Findings**

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3 The findings are presented along the three primary research questions that emerged from the
4 coding of studies: (1) Does MWB differ by type of entrepreneur? What are the (2)
5 antecedents and (3) consequences of entrepreneurs' MWB? Figure 1 provides a visual
6 mapping of the review findings, including the general concepts studied as antecedents and
7 consequences of MWB in the 144 studies. Tables 1 and 2 map the specific antecedents and
8 consequences studied, their relationship with MWB in the reviewed studies, the frequency
9 and number of high-quality studies, as well as notes on unexpected findings.

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18 --- insert Figure 1 about here ---
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21 **Prelude: MWB and Types of Entrepreneur**

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23 Sixteen studies investigated whether different types of entrepreneur are 'better off' in
24 terms of MWB. These studies are largely descriptive and their findings consistent.
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26 Entrepreneurs who may be broadly characterized as *opportunity entrepreneurs* experienced
27 higher MWB than necessity entrepreneurs (Online Supplement Table A1 for the list of
28 individual studies). With one exception⁵, all studies found that opportunity entrepreneurs
29 were 'happier' and less distressed than necessity entrepreneurs. One study across 74 countries
30 suggests a similarly positive relationship between national rates of opportunity
31 entrepreneurship and life satisfaction (Naudé, Amorós, & Christi, 2014).
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41 The MWB benefits of being an opportunity versus necessity entrepreneur were
42 evident in both cross-sectional and longitudinal studies (all studies were based on random,
43 representative samples). They held for differing ways of identifying opportunity and
44 necessity entrepreneurs; for instance, based on whether they transitioned into self-
45 employment from employment or unemployment, their preferences and desire for self-
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53 ⁵ The one exception was a study that found descriptively the expected differences between entrepreneurs with
54 and without employees in subjective quality of life, as an overall assessment that combines both mental and
55 physical health – but these became non-significant after adjusting for controls (Saarni, Saarni, & Saarni, 2008).
56 This was the only study that used a measure of MWB that may be confounded by physical health.
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3 employment, the number of employees (or none), whether they were skilled or unskilled, ran
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5 an incorporated business or sole proprietorship, were independent or dependent contractors,
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7 or were formally or informally self-employed. The differences were also robustly found for
8
9 different types of MWB indicators. The most frequently studied were: in five studies, life and
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11 job satisfaction; in four studies, distress (anxiety, depressive symptoms, burnout); two studies
12
13 concerned suicide mortality; and two studies researched subjective well-being (combining
14
15 satisfaction and affect). Moreover, opportunity entrepreneurs had higher family and health
16
17 satisfaction than necessity entrepreneurs, but both types of entrepreneurs were equally
18
19 dissatisfied with the lack of leisure time (Binder & Coad, 2016; Johansson Sevä, Larsson &
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21 Strandh, 2016).

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24 To explain these differences, the reviewed studies referred either to the higher
25
26 autonomy and deliberate choice that opportunity versus necessity entrepreneurship involved,
27
28 or to differences in human capital (education), personality traits, and preferences (e.g., higher
29
30 desire for independence or power among opportunity entrepreneurs, Binder & Coad, 2016;
31
32 Petrescu, 2016; Van den Heuvel, & Wooden, 1997). While empirical tests were rare,
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34 opportunity entrepreneurs indeed reported more autonomy and in one study they experienced
35
36 growing life, job and health satisfaction over the first three years after starting their firm
37
38 (Binder & Coad, 2016). This pattern is consistent with the view that the effects of autonomy
39
40 take time to unfold (Ford et al., 2014). It is also consistent with another study that found that
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42 entrepreneurs that are established have higher MWB than those starting out (Zbierowski,
43
44 2014). In two further studies the MWB differences between opportunity and necessity
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46 entrepreneurs were partly explained by education (Sikora & Saha, 2009), and by
47
48 entrepreneurial traits, desire for independence and intrinsic work motivation (Johansson Sevä,
49
50 Larsson, et al., 2016). These findings point to possible antecedents of entrepreneurs' MWB.

51 52 53 54 **Antecedents of Entrepreneurs' MWB**

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3 I present antecedents according to whether they have positive effects (resources) or
4 negative effects (in the form of stressors or vulnerabilities) on entrepreneurs' MWB. The
5 antecedents studied clustered into six broad categories: work characteristics (49 studies);
6 personality traits; values and other personal resources (54 studies); firm and financial
7 characteristics (37 studies); social support and stressors (25 studies); market- and country
8 context (26 studies); and physical context (four studies). Table 1 gives an overview of the
9 findings by listing: the characteristics identified in each of the six categories; how many times
10 they were studied; and the relationship with entrepreneurs' MWB. Table 1 also reports the
11 number of studies with stronger research designs (longitudinal, lagged, and experience
12 sampling design, as well as experiments). In the following synthesis of findings I focus on the
13 most frequently studied characteristics as well as the unexpected findings. I privilege studies
14 with stronger research designs to provide examples. Table A2 in the Online Supplement lists
15 and summarizes each study in this stream.

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31 --- insert Table 1 about here ---
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34 **Work characteristics.** Work characteristics broadly describe the nature and
35 organization of entrepreneurs' work tasks and activities (cf. Parker, 2014). Of the 49 studies
36 that included measures of work characteristics, 13 had longitudinal or lagged study designs.
37 Intuitively two features of entrepreneurs' work stand out, entrepreneurs have high *autonomy* -
38 they can make decisions about what, when and with whom to work (Parker, 2014) - and they
39 have 'stressful' jobs – high work *demands* that require intense effort and concentration
40 (Karasek, 1979). Autonomy, also called job control, and work demands are the two
41 dimensions of the Job Demand Control Model (Karasek, 1979), a well-supported model of
42 work stress (e.g. Hausser et al., 2010). These two aspects were also the two most frequently
43 studied work characteristics in the review, and the pattern of findings (Table 1) confirms
44 expectations that autonomy is positively related and demands are negatively related to MWB.
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3 Two studies found no effect of autonomy and demands on MWB. One was based on a small
4 sample of $N=53$ (Rau et al., 2008). The other study was a longitudinal study but alongside the
5 measure of work autonomy it included farm-specific work characteristics that were more
6 powerful predictors of MWB (Wallis & Dollard, 2008).
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11 Studies investigated two further measures of work stressors that are closely related to
12 work demands. For *role stress* (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964), six studies
13 consistently showed negative effects on entrepreneurs MWB. For *working hours*, one study
14 found that a subset of starting entrepreneurs were more satisfied with their work if they
15 experienced high demands and also worked long hours (Bradley & Roberts, 2004). It was
16 interpreted as a signal that the business is doing well. A large cross-country study also found
17 a positive association of longer working hours with higher MWB (Millán, Hessels, Thurik, &
18 Aguado, 2013). These mixed findings suggest that entrepreneurs can appraise long working
19 hours as a challenge stressor, i.e. as a stressor that is perceived to entail opportunities for
20 future achievement (Podsakoff, LePine, & LePine, 2007, see also discussion section).
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33 Among the studies investigating working hours, four referred to recovery processes,
34 understood as the processes of recuperating from work demands through detachment from
35 work and engagement in leisure activities (Sonnentag & Fritz, 2015). Two found that taking
36 time off work enhanced entrepreneurs' MWB (cross-sectionally for the length of vacation
37 time, Rau et al., 2008, and when comparing entrepreneurs' MWB before and after a recovery
38 retreat, Vesala & Tuomivaara, 2015). Entrepreneurs themselves also considered vacation
39 time as a resource for their well-being in a qualitative study (Lechat & Torrès, 2017). In
40 another cross-sectional study, working long hours were no longer related to entrepreneurs'
41 MWB when recovery processes were also taken into account. Entrepreneurs that were able to
42 mentally detach from work in their leisure time were unaffected by working long hours
43 (Taris, Geurts, Schaufeli, Blonk, & Lagerveld, 2008).
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3 With regard to other work resources, *time flexibility* had the expected positive effects
4 on MWB even when considered alongside autonomy with which it overlaps (see Table 1 for
5 details). The ability to make use of one's skills at work (*skill utilization*) also tended to have
6 positive effects (see Table 1 for details). The remainder of the work resources considered
7 were features that describe motivating work settings in the Job Characteristics Model (JCM,
8 Hackman & Oldham, 1975; autonomy is also contained in this model). These features are the
9 *significance or meaningfulness* of work, how *interesting* and varied the work is, how
10 coherent it is (*task identity*), and whether work offers an opportunity for *feedback* on one's
11 actions and thus opportunities to learn. Two studies were explicitly based on the JCM and
12 supported these relationships, except for task identity (Hytti, Kautonen, & Akola, 2013;
13 Schjoedt, 2009). Other studies investigated individual JCM features and also found the
14 expected positive effects (Table 1). Yet, two qualitative studies suggest that work can become
15 *too significant* to entrepreneurs, and all-consuming, which implies an inverse-U shaped
16 relationship of meaningfulness with MWB (Fisher, Maritz, & Lobo, 2013; Spivack,
17 McKelvie, & Haynie, 2014) – an intriguing avenue for future research (see discussion).
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35 Studies that included samples of salaried employees consistently found that
36 entrepreneurs reported higher autonomy. This was true for both opportunity *and* necessity
37 entrepreneurs, although the former reported the highest level of autonomy (Johansson Sevä,
38 Larsson et al., 2016). Autonomy, sometimes alongside other work characteristics, explained
39 the majority (Benz & Frey, 2008) or all of the difference in work satisfaction between
40 entrepreneurs and employees (Hytti et al., 2013; Prottas & Thompson, 2006).
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48 Studies of work characteristics imply a malleable view of entrepreneurs' MWB,
49 which contrasts with the self-selection view of the personality perspective (Baron et al.,
50 2016). Research combining personality and work characteristics would allow testing of
51 competing explanations of selection versus work characteristics, but such research was
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3 sparse. Studies in the review that explored both work and personality suggest that the two
4
5 explanations are compatible, and interact to shape entrepreneurs' MWB. Lange (2012) found
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7 that work autonomy accounted for the MWB differences between entrepreneurs and
8
9 employees when controlling for differences in personality traits and values. Although cross-
10
11 sectional, this study suggests that work characteristics help explain MWB benefits in addition
12
13 to self-selection effects. In a diary study over 25 weeks, Totterdell, Wood and Wall (2006)
14
15 found that weekly variations in autonomy and demand predicted changes in entrepreneurs'
16
17 MWB (distress). Trait optimism moderated these effects. It further boosted the beneficial
18
19 effects of high autonomy/high demand work (the so-called active job), while pessimism
20
21 worsened the effects of high-strain jobs (low autonomy/high demand).
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24 **Personality traits, values and other personal resources and vulnerabilities.** Of the
25
26 53 studies that included measures of personal resources and vulnerabilities, 14 employed
27
28 stronger research designs (longitudinal, lagged, experimental or experience sampling). Most
29
30 frequently studied were personality traits (27 studies), followed by human capital (education
31
32 and specific skills, 13 studies), entrepreneurs' values and motivations (12 studies), and
33
34 'other' characteristics (eight studies). See Table 1 for an overview.
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37 **Personality traits.** Most studies investigated personality traits as *resources* that would
38
39 enhance entrepreneurs' MWB. Table 1 shows the range of different traits studied, including
40
41 *psychological capital traits*, traits that are associated with entrepreneurship such as *risk-*
42
43 *taking* and *internal locus of control*, and the *Big Five personality traits* (e.g., Baron et al.,
44
45 2016; Przepiorka, 2017). They showed overwhelmingly the expected beneficial effects on
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47 entrepreneurs' MWB (Table 1) including in the rare longitudinal and lagged studies (Laguna,
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49 Razmus, & Żalisński, 2017; Roche, Haar, & Luthans, 2014).
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52 There are a small number of exceptions to this pattern. These point to inverse-U
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54 shaped relationships or 'optimum levels' beyond which even traits that are widely considered
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3 to be resources for personal well-being (*self-efficacy* and *optimism*) can have negative effects.
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5 In one study, self-efficacy moderated the effect of entrepreneurs' improvisational behavior on
6
7 their work satisfaction (Hmieleski & Corbett, 2008). Entrepreneurs that were both highly
8
9 self-efficacious and engaged in improvisation were least satisfied, even though further results
10
11 suggested that they were also the ones leading the most dynamically growing companies.
12
13 These entrepreneurs may have been overexerting themselves. Similarly, one longitudinal
14
15 study found that optimism can lead to lower MWB in the longer term when overly positive
16
17 expectations do not materialise (Dawson, 2017). High levels of optimism before starting a
18
19 business led to lower work satisfaction and lower satisfaction with pay once the individual
20
21 became an entrepreneur. Yet in the shorter term, optimism benefitted entrepreneurs' MWB as
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23 reported in a 25-week diary study (Totterdell et al., 2006) and in a cross-sectional study on
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25 samples from 19 European countries (Lange, 2012).
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29 *Coping styles* were investigated as habitual approaches to dealing with challenging
30
31 situations. All studies found the expected positive effects of problem-focussed and related
32
33 proactive coping styles on MWB (e.g., Drnovšek, Örtqvist, & Wincent, 2010; Müller &
34
35 Gappisch, 2005). Two studies additionally pointed to the functionality of emotion-focussed
36
37 coping styles to enhance MWB (Patzelt & Shepherd, 2011; Uy, Foo, & Song, 2013).
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41 In terms of *vulnerabilities*, *neuroticism* and related constructs of trait negative affect
42
43 expectedly reduced entrepreneurs' MWB in all five studies that investigated this relationship
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45 (e.g., Bradley & Roberts, 2004; Morrison, 1997). Entrepreneurs that were high in *fear of*
46
47 *failure* also had lower MWB in one study (Bahmannia, Tharan, & Wang, 2013).
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50 ***Human capital.*** Human capital describes the skills acquired through experience and
51
52 education (Becker, 1964). Due to their broader skills set, individuals with high human capital
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54 should be better able to cope with the demands of entrepreneurial work. Indeed,
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56 entrepreneurs reported that they experience their low or deficient *business and*
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3 *entrepreneurial skills* as stressful (Ahmad & Arabia, 2010; Vaag, Giæver, & Bjerkeset,
4 2014). One study investigated the effect of business skills on MWB in a randomized control
5 trial with microfinance entrepreneurs. Business skills training, whether on its own or in
6 combination with the provision of longer-term access to finance, had positive effects on the
7 MWB of male entrepreneurs (Berge, Bjorvatn, & Tungodden, 2015)⁶.

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14 The effects of *stress and self-management skills* on entrepreneurs' MWB were
15 positive in two studies. This included a randomized control trial on entrepreneurs who were
16 on sick leave due to mental health issues, training them in self- and stress-management
17 (Blonk, Brenninkmeijer, Lagerveld, & Houtman, 2006). By comparison the effects of *past*
18 *experience* were not clear cut (see Table 1), likely because the measures of experience were
19 coarse and typically considered the length rather than the quality of the experience. A case in
20 point is a cross-sectional study in which the MWB of entrepreneurs was negatively related to
21 the number of times they had failed with past businesses (Zhang, Chen, Li & Zhou, 2016).

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31 The findings for *education* were ambivalent (see Table 1) even in two longitudinal
32 studies. It is likely that two countervailing processes are at work; the broader skills set
33 associated with education can indeed yield MWB benefits (Millan et al., 2013), but at the
34 same time, better education entails higher opportunity costs for the entrepreneur. Highly
35 educated entrepreneurs are able to achieve significant income in paid employment. Such
36 comparison processes may make highly educated entrepreneurs relatively less satisfied with
37 their work. Dawson's (2017) longitudinal study is consistent with this explanation. The
38 highly educated entrepreneurs reported lower satisfaction with both their work and their pay
39 than did less well-educated entrepreneurs. Kwon and Sohn (2017)'s study suggests that the
40 negative MWB impact of opportunity cost considerations is particularly salient in emerging
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53 ⁶ For female entrepreneurs the effects were non-significant. This is probably due to a combination of factors,
54 including the fact that their husbands exerted control over their wives' businesses and earnings. Women's lower
55 willingness to compete may also play a role, as may the extent to which their expectations of the intervention
56 were disappointed (Berge et al., 2015).
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3 economies where employed work is held in higher social esteem than entrepreneurship. In
4
5 their study in Indonesia, the most highly skilled self-employed were least satisfied with their
6
7 work and, conversely, those with the lowest qualifications were most satisfied.

8
9 ***Personal motivations and values.*** Motivations and values refer to specific and general
10
11 goals that energize actions, thus they describe 'why' people engage in actions while
12
13 personality traits describe 'how' people typically act (Roccas, Sagiv, Schwartz, & Knafo,
14
15 2002). All 12 studies that related entrepreneurs' motivations and values to their MWB are
16
17 cross-sectional, thus the findings are best described as correlates of entrepreneurs' MWB.
18
19 Table 1 shows a consistent pattern that is in line with extant motivational theories such as
20
21 self-determination theory (Ryan & Deci, 2000). Entrepreneurs' that were driven by *intrinsic*
22
23 *motivations* (both general and specific intrinsic values) exhibited higher MWB than those
24
25 motivated by *extrinsic factors* such as financial success. At the same time achieving the goals
26
27 the entrepreneurs' had set themselves was also positively associated with higher MWB.
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31 ***Other personal characteristics.*** A range of other personal characteristics were
32
33 investigated and to detail the findings for all of them (often included as control variables in
34
35 regressions) would go beyond the scope of the review. Two findings are noteworthy, better
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37 *physical health and health maintenance behaviors* (e.g., exercise) were positively related to
38
39 entrepreneurs MWB. Being an *immigrant* entrepreneur also had MWB benefits in two studies
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41 including one longitudinal study, which also suggested that these benefits may become
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43 smaller for subsequent generations (Clark, Colombier, & Masclat, 2008).
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47 ***Firm and financial characteristics.*** Firm and financial characteristics were
48
49 considered as both objective and subjective resources and stressors (e.g., perceptions of firm
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51 success, income uncertainty, and financial problems). Subjective perceptions of success can
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53 be more decisive for entrepreneurs' action than objective factors (Gimeno, Folta, Cooper, &
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3 Woo, 1997); a finding that also plays out in the reviewed studies. Of the 37 studies
4
5 investigating firm and financial characteristics, 15 had stronger research designs (Table 1).

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7 ***Firm and financial resources.*** Overall the effects of personal financial rewards and
8
9 perceived firm success on entrepreneurs' MWB were positive, while the MWB-effects of
10
11 objective indicators of firm performance, size and financial resources were more nuanced.

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13 *Income and related financial rewards derived from the firm* related positively to
14
15 entrepreneur' MWB in all studies that investigated such rewards, including in longitudinal
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17 studies (Dawson, 2017; Millan et al., 2013). Moreover, entrepreneurs' subjectively *perceived*
18
19 *firm success* was positively related to their MWB in five cross-sectional studies. Similarly, in
20
21 qualitative research, entrepreneurs named firm performance, growth, and success as
22
23 important sources of their MWB (Lechat & Torrès, 2017).

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26 Only two studies investigated objective *firm performance*, and they failed to establish
27
28 the expected positive effects. In a cross-sectional study, those entrepreneurs whose firms
29
30 were performing well experienced lower well-being and leisure satisfaction, although they
31
32 were highly satisfied with their income (Carree & Verheul, 2012). This points to important
33
34 trade-offs across well-being domains. In a longitudinal study, business owners' mental
35
36 recovery after a disaster was unrelated to the economic performance of their firms (de Mel,
37
38 McKenzie, & Woodruff, 2008). At the same time, entrepreneurs leading *larger* firms (with a
39
40 higher *number of employees*) reported higher well-being in three studies. It is worth noting
41
42 that one longitudinal study paints a more nuanced picture by also considering work
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44 characteristics: entrepreneurs with employees experienced higher work demands than those
45
46 without employees, which in turn increased their level of distress (Hessels, Rietveld, & Van
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48 der Zwan, 2017).

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52 In line with the rationale that the effect of firm resources is mediated by subjective
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54 experiences, two randomized control trials did not find positive effects of the availability of
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3 *financial resources* on micro-credit entrepreneurs' MWB. Indeed, entrepreneurs' well-being
4 declined slightly, and distress increased in the treatment group receiving loans, because the
5 expansion of business activities increased entrepreneurs' workload (Karlan & Zinman, 2011).
6
7 Similarly, the effect of obtaining long-term finance on the happiness of entrepreneurs was
8 contingent upon also receiving business skills training, in part because of the boost to the
9 entrepreneurs' confidence (Berge et al., 2015).
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16 ***Firm and financial stressors.*** All studies that investigated firm *financial problems*
17 found that these lowered entrepreneurs' MWB (Table 1). This was the case for all cross-
18 sectional (Annink, Gorgievski, & Den Dulk, 2016; Kallioniemi, Simola, Kaseva, &
19 Kymäläinen, 2016; Kallioniemi, Simola, Kymäläinen, Vesala, & Louhelainen, 2009; Torp,
20 Syse, Paraponaris, & Gudbergsson, 2017) and two longitudinal studies (over three years,
21 Gorgievski, Bakker, Schaufeli, Van der Veen, & Giesen, 2010; and one year, Wallis &
22 Dollard, 2008). The exception was a study of a smaller sample of 91 farmers over 10 years
23 (Gorgievski-Duijvesteijin, Giesen, & Bakker, 2000). Entrepreneurs also perceived financial
24 problems as a key stressor in a qualitative study (Lechat & Torrès, 2016). Equally three
25 related studies found consistently that entrepreneurs with *low income* had lower MWB
26 (Anderson & Hughes, 2010; D'Angelo et al., 2016; Kwon & Sohn, 2017).
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40 The effects of financial problems and low pay seem to go beyond their material
41 impacts. Entrepreneurs appear to perceive financial problems and poor venture performance
42 as a threat to their self-image and even their identity. Studies investigating *job loss* and *job*
43 *insecurity/uncertainty* are consistent with such a view. They found the expected negative
44 effects on entrepreneurs' MWB; but also that entrepreneurs suffered significantly more
45 distress from job loss, the threat of job loss, and periods of unemployment, than did
46 comparable groups of employees (e.g., in two longitudinally studies Backhans &
47 Hemmingsson, 2012; Hetschko, 2016). Identity shifts and intense feeling of loss occurred
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Running Head: ENTREPRENEURS' MENTAL WELL-BEING (MWB) 24

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3 even for entrepreneurs who voluntarily retired from their firms (Byrnes & Taylor, 2015).

4
5 Conversely, a longitudinal study found that entrepreneurs who delayed retirement had a
6
7 lower risk of developing dementia (Dufouil et al., 2014).

8
9 **Social resources and stressors.** Of the 25 studies that investigated *social support* six
10
11 had stronger research designs (Table 1). Social relationships are an important source of
12
13 MWB, and the review shows that this is no different for entrepreneurs irrespective that they
14
15 have far fewer sources of work-related social support compared to employees (Rahim, 1996;
16
17 Tetrick, Slack, Da Silva, & Sinclair, 2000). In a longitudinal study, Fernet, Torrès, Austin and
18
19 St-Pierre (2016) found that entrepreneurs who were lonely and socially isolated were more
20
21 likely to develop burnout. When available, *social support* from others at work and from their
22
23 family was consistently positively related to entrepreneurs' MWB in cross-sectional and
24
25 longitudinal studies (Nguyen & Sawang, 2016; Totterdell et al., 2006). In two cross-sectional
26
27 studies, social support moderated (mitigated) the effect of other stressors and negative
28
29 emotional experiences on MWB (Bahmannia et al., 2013; Tetrick et al., 2000).

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33 How entrepreneurs balance their *family roles* with their work was covered in 11
34
35 studies. More studies investigated *work-family conflict* compared to *work-family enrichment*
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37 (Table 1). Conflicts between the two domains impacted entrepreneurs' MWB negatively in
38
39 all nine studies in the review, including in a longitudinal study (Nguyen & Sawang, 2016). A
40
41 randomized control trial found a negative effect of work-family conflict only for female
42
43 entrepreneurs (Berge et al., 2015). Three further studies were based solely on samples of
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45 female entrepreneurs (Anderson & Hughes, 2010; McLellan & Uys, 2009; Ugwu, Orjiakor,
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47 Enwereuzor, Onyedibe, & Ugwu, 2016). A further cross-sectional study separately identified
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49 *family conflicts* as an additional stressor for entrepreneurs (Kallioniemi et al., 2009). More
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51 specifically, a study of female entrepreneurs in Tanzania identified their partners' control
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53 over their finances and business as a limiting factor for their MWB (Dutt, Grabe, & Castro,
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3 2016). Interestingly, this was much less the case for collective entrepreneurship in the form of
4 a co-operative, which provided these women with important peer social support from fellow
5 entrepreneurs. Finally, *work-family enrichment* was part of three studies that also investigated
6 work-family conflict (McLellan & Uys, 2009; Nguyen, & Sawang, 2016; Ugwu et al, 2016).
7 It had consistent positive effects on entrepreneurs' MWB.
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13 The qualitative studies in the review also pointed to new and overlooked social
14 resources and stressors. This includes positive *feedback from customers* as a resource
15 boosting entrepreneurs' MWB (Anderson & Hughes, 2010; Lechat & Torrès, 2017), and
16 *conflicts with customers and employees* as a significant and frequent social stressor straining
17 entrepreneurs' MWB (Lechat & Torrès, 2016; Schonfeld & Mazzola, 2015). One cross-
18 sectional study uniquely identified entrepreneurs' felt *responsibility for people at work* as a
19 strain on their MWB (Begley, 1994).
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28 **Context.** Twenty-five studies (six with stronger research designs) investigated
29 different layers of context. These included the local business climate, the level of societal
30 esteem of entrepreneurs, and the impact of shocks (see Table 1).
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35 The *business climate (or level of demand in the market)* was the subject of five
36 studies. A further four studies investigated the related effects of *economic recession*, and two
37 studied the effect of *competition in the market*. Collectively these 11 studies provide evidence
38 that entrepreneurs' MWB is shaped by the wider market and economic environment. More
39 specifically, objective measures of economic growth (Johansson Sevä, Vinberg, Nordenmark,
40 & Strandh, 2016) and business climate (Jiang, Lu, & Lu, 2017) affected entrepreneurs' MWB
41 positively. Entrepreneurs themselves highlighted the stressful effects of low customer
42 demand in three qualitative studies (Lechat & Torrès, 2016, 2017; Schonfeld & Mazzola,
43 2015). The effects of the *recession* triggered by the 2008 financial crisis were the subject of a
44 further three studies. One study across 20 European countries did not find a link with
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Running Head: ENTREPRENEURS' MENTAL WELL-BEING (MWB) 26

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3 entrepreneurs' risk of developing depression (Buffel, De Velde, & Bracke, 2015). Yet, two
4
5 studies from Spain (a country that was strongly affected by the crisis) found expected
6
7 changes in entrepreneurs' MWB due to the crisis (Cueto & Pruneda [2017], based on annual
8
9 labour force surveys; Real et al. [2016], based on records of diagnosed mental disorders).
10
11 Equally, a study in China found that a local recession dampened entrepreneurs' MWB (Jiang
12
13 et al., 2017). Finally, strong *market competition* strained entrepreneurs' MWB in two
14
15 longitudinal studies, both directly (Wallis & Dollard, 2008), and indirectly through increasing
16
17 role stress (Wincent & Örtqvist, 2009).
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20 Turning to cultural factors, three cross-sectional studies suggest that the lack of
21
22 *societal esteem for entrepreneurs* diminishes their MWB (Kallioniemi et al., 2016; Kwon &
23
24 Sohn, 2017). Yet a supportive societal context can also make failing more difficult.
25
26 Entrepreneurs whose businesses had failed in the past had lower MWB, especially when they
27
28 perceived their environment to be supportive of entrepreneurship (Zhang et al., 2016).
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31 Five studies investigated context from the perspective of *reactions to 'shocks'* such as
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33 industrial and natural disasters (e.g., chemical explosion, tsunami), and personal trauma
34
35 (cancer survivors). They again point to the close link of entrepreneurs' work to their identity.
36
37 In four studies (two cross-sectional, two longitudinal), entrepreneurs were among the groups
38
39 whose MWB suffered the most due to the shock (Cohidon et al., 2009; De Mel et al., 2008;
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41 Torp, Nielsen, Gudbergsson, & Dahl, 2012; Torp et al., 2017). Another study found that
42
43 starting a business in the immediate aftermath of a natural disaster can help especially highly
44
45 educated individuals to cope with the disaster (Williams & Shepherd, 2016).
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48 ***Physical working environment.*** The physical work environment was investigated in
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50 four cross-sectional studies (Anderson & Hughes, 2010; Gunnarsson, Vingard, & Josephson,
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52 2007; Kallioniemi et al., 2016; Sörensson & Dalborg, 2017). Poor physical working
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54 environments, including a heavy physical work load and the use of toxic materials, strained
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3 entrepreneurs' MWB. At the same time, for farm and nature entrepreneurs, the physical work
4 environment ('nature') was positively related to their MWB.

8 **Consequences of Entrepreneurs' MWB**

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10 The reviewed research studied the impact of entrepreneurs' MWB on *performance-*
11 *related outcomes*, at the level of the individual entrepreneur by investigating persistence
12 (seven studies), opportunity recognition (five studies), and work behaviors (five studies); and
13 for the performance of entrepreneurs' firms (eight studies). Further studies linked
14 entrepreneurs' MWB to other individual-level *outcomes for the entrepreneur* (their physical
15 health and stress, one study each) and explored the consequences of *entrepreneurs' MWB for*
16 *others*, including the entrepreneurs' families (children and life partner, three studies) and
17 societal conflict (one study). Three studies included measures of two different consequences.
18 Of the 28 studies reviewed in this section, ten employed longitudinal, lagged or experience
19 sampling designs, one was an ethnographic study, and the remaining 17 were cross-sectional
20 studies. Table 2 in the Online Supplement provides details of all studies. Figure 2 is based on
21 the reviewed studies and gives an overview of the type of consequences studied, their
22 possible relationships, and the frequency with they were studied. It also contains additional
23 outcomes that future research could explore, which will be detailed in the discussion section.

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40 ---- Figure 2 and Table 2 about here ---

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42 Why would MWB be related to *performance outcomes*? MWB can act as a self-
43 regulatory mechanism as described in Conservation of Resources Theory (Hobfoll, 2001).
44 Entrepreneurs with high MWB can draw on more cognitive and affective resources to work
45 on the business (Hobfoll, 2001). In particular, the positive affect associated with high MWB
46 broadens thought and action repertoires (e.g., facilitating creativity and opportunity
47 recognition) and in turn helps the building of future resources (as described in the Broaden-
48 and-Build theory, Fredrickson, 2001). The studies in the review relating MWB to opportunity
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3 recognition and work-related behaviors help to unpack such micro-level mechanisms that
4
5 underpin the MWB-firm performance link. Low MWB triggers efforts to conserve resources,
6
7 which can mean that entrepreneurs withdraw from this highly demanding activity altogether.
8
9 Moreover, entrepreneurs see their MWB as an indicator of their success as entrepreneurs
10
11 (Wach et al., 2016) and, thus, low MWB indicates that they are not achieving their goals,
12
13 again encouraging withdrawal. I first discuss the evidence that relates MWB to an
14
15 individuals' persistence in entrepreneurship and their firm's performance, before delving into
16
17 studies on possible individual-level intervening processes (opportunities and work behaviors),
18
19 and those considering consequences of entrepreneurs' MWB for others.
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22 *Persistence* is the lack of withdrawal from entrepreneurial activity. Entrepreneurs
23
24 with higher MWB were more likely to persist in entrepreneurship in six of the seven studies
25
26 that investigated it, including in three longitudinal studies (Gorgievski et al., 2010; Patel &
27
28 Thatcher, 2014; Wincent et al., 2008). One cross-sectional study found this to be the case
29
30 only for entrepreneurs who had already fewer resources (low social capital, Pollack, Vanepps
31
32 & Hayes, 2012). Other cross-sectional studies found that entrepreneurs with higher MWB
33
34 were more likely to persist and re-start their business after an external disaster had destroyed
35
36 it (Kadowaki et al., 2016), while 'happier' older entrepreneurs were more likely to intend to
37
38 delay their retirement (Kautonen, Hytti, Boegenhold, & Heinonen, 2012). The one exception
39
40 was a descriptive cross-sectional study of Bed & Breakfast owners, in which job satisfaction
41
42 was unexpectedly positively and work-family balance expectedly negatively associated with
43
44 exit planning (Crawford & Naar, 2016). It may be that owners who were satisfied with their
45
46 work, sought to buy a larger business with employees to increase their work-life balance.
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50 In seven out of the eight studies that investigated *MWB and firm performance*,
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52 'happier' entrepreneurs led higher performing firms, whether performance was measured as
53
54 business growth, innovative behavior, perceived success, fewer perceived financial problems
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3 or customer service quality perceptions. This was true for different MWB indicators of
4
5 distress, negative affect and eudaimonic well-being (cross-sectionally, Gorgievski, Moriano,
6
7 & Bakker, 2014; and longitudinally Gorgievski-Duijvesteijn et al., 2000; Gorgievski et al.,
8
9 2010) as well as related indicators of coping styles (longitudinally, Ayala & Manzano, 2014;
10
11 and cross-sectionally, Örtqvist, Drnovsek, & Wincent, 2007). Similarly, a study on manic
12
13 depression (bi-polar disorder) found that entrepreneurs with manic vulnerabilities were more
14
15 likely to report losses (Johnson, Freeman, & Staudenmaier, 2015); and a study of hairstylist
16
17 business owners found that their customers reported higher service satisfaction the more
18
19 satisfied and committed the owners were (Payne & Webber, 2006). The exception to this
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21 pattern was one longitudinal study in which higher distress predicted higher personal income
22
23 at the cost of worse physical health (Cardon & Patel, 2015). Trait positive affect strengthened
24
25 the stress-income relationship and directly enhanced income. This study is consistent with the
26
27 view that distress, especially in combination with trait psychological resources, can lead to
28
29 the mobilization of extra effort and benefit performance. Yet over the longer term the
30
31 persistent strain on the body damages the physical health (McEwen, 1998).
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35 In addition to entrepreneurs' MWB influencing their physical health (Cardon & Patel,
36
37 2015), one other study investigated *outcomes for the entrepreneur*. In a longitudinal study,
38
39 Örtqvist and Wincent (2010) found that exhausted and dissatisfied entrepreneurs were more
40
41 likely to subsequently perceive their work as more demanding and stressful.
42
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44 All five studies examining the effects of MWB on *opportunity recognition* were
45
46 cross-sectional studies. Lower MWB was related to reduced opportunity recognition,
47
48 especially for older entrepreneurs (Gielnik, Zacher, & Frese, 2012) – a finding consistent
49
50 with a resource-diminishing effect of low MWB, to which more vulnerable entrepreneurs are
51
52 especially susceptible. Conversely, Rietveld, Bailey, Hessels, & Van der Zwan (2016) found
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54 that healthier business owners saw more opportunities for firm growth. Foo (2011, study 2)
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2
3 found that entrepreneurs with high anger as well as those with high happiness identified more
4
5 uncertain high-value opportunities. Even though anger and happiness differ in valence, they
6
7 both trigger similar confidence mind-sets, which allow for the exploration of more uncertain
8
9 opportunities. Foo's (2011) study thus points to a potential upside of low MWB, as do two
10
11 studies that explored ADHD and ADHD-like symptoms. In particular, the impulsivity
12
13 component of ADHD was positively related to entrepreneurs' opportunity development
14
15 (Wiklund, Patzelt, & Dimov, 2016) as well as their entrepreneurial orientation (Thurik,
16
17 Khedhaouria, Torrès, & Verheul, 2016).
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20 Five studies explored different micro-level processes that help to unpack the effects of
21
22 MWB by linking it to entrepreneurs' *work behaviors*. One experience sampling study
23
24 demonstrated that negative and positive affective states influence entrepreneurs' work focus
25
26 differently, by expending *effort* on either immediate or future-oriented tasks respectively
27
28 (Foo, Uy, & Baron, 2009). A cross-sectional multi-level study presents complementary
29
30 evidence investigating goal-related affect. Positive affect, related to specific work and family
31
32 goals, enabled goal realization, while entrepreneurs found it more difficult to achieve goals
33
34 with a negative emotional connotation (Laguna, Alessandri, & Caprara, 2016). A MWB-
35
36 related psychological resource ('positive orientation') moderated and facilitated these
37
38 processes. In cross-sectional studies, more satisfied entrepreneurs were less likely to engage
39
40 in *absenteeism* (absence from work because of health problems), indicating that those with
41
42 high MWB are willing to expend more effort at work, despite health problems (Cocker,
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44 Martin, Scott, Venn, & Sanderson, 2013; Lechmann & Schnabel, 2014). However, a
45
46 longitudinal study paints a more nuanced picture. Entrepreneurs' *proactive work behaviors*
47
48 were stimulated by eudaimonic and not hedonic well-being (vigor vs. life-satisfaction, Hahn,
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50 Frese, Binnewies, & Schmitt, 2012).
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3 With regard to *consequences of entrepreneurs' MWB for others*, one longitudinal
4 study identified crossover effects on the MWB of entrepreneurs' life partners (Gorgievski-
5 Duijvesteijin et al., 2000). Related longitudinal research found negative effects stemming
6 from the stress, workload and time commitment of parental self-employment on children's
7 MWB (Wirback, Möller, Larsson, Galanti, & Engström, 2014). Gudmundsson (2013) offers a
8 nuanced exploration of immigrant entrepreneurs' families describing both vicious cycles as
9 well as empowering effects. Finally, Tobias, Mair and Barbosa-Leiker (2013) found that
10 increases in entrepreneurs' MWB reduced their out-group prejudice (a key source of social
11 conflict) in post-genocide Rwanda.
12
13

14 **Dynamic relationships.** Three studies in the review employed longitudinal cross-
15 lagged panel research designs and were able to test for reciprocal relationships of MWB with
16 outcomes. Gorgievski-Duijvesteijin et al. (2000) and Gorgievski et al. (2010) noted negative
17 downward spirals between low MWB and financial problems. Örtqvist and Wincent (2010)
18 found reciprocal relationships between role stress and low MWB, suggesting that exhausted
19 and dissatisfied entrepreneurs were more likely to view their work as demanding, which lead
20 them to spiral downwards to further exhaustion and more dissatisfaction. Gudmundsson
21 (2013) describes similar virtuous and vicious circles qualitatively in their study of immigrant
22 entrepreneurs and their children. The feedback loops implied by such dynamic relationship
23 are depicted by the arrows at the bottom of Figures 1 and 2.
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45 **Discussion and Future Research**

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47 This aim of this review is to draw attention to entrepreneurs' MWB as a research area that
48 should be positioned more centrally in management and entrepreneurship research. Through
49 synthesizing and mapping the existing knowledge that is currently dispersed across a variety
50 of disciplines the review provides a platform for future theoretical and empirical work on
51 entrepreneurs' MWB. The specific findings advance our understanding of entrepreneurs'
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MWB. They systematize our knowledge about the antecedents and consequences of entrepreneurs' MWB and MWB differences among different types of entrepreneur. In particular, the review identifies novel overlooked antecedents of entrepreneurs' MWB that go beyond the work, social and personality characteristics emphasized in current research. These novel antecedents are related to entrepreneurs' motivation, human capital, firm and financial characteristics, as well as market and country context. The review also contributes by highlighting new 'social' consequences of entrepreneurs' MWB for others beyond the entrepreneur, whilst integrating findings on known consequences related to entrepreneurs' work behaviors and firm performance.

Collectively these findings provide a framework for research on entrepreneurs' MWB (Figures 1 and 2). They also point the way to evolving a new theory of entrepreneurial work and MWB by highlighting emerging themes and blind spots. This enables us to develop a more dynamic, variable, socialized, and contextualized view of entrepreneurs' MWB that takes account of the fluidity of entrepreneurs' work-life settings and the centrality of their work to their identity.

From Theories for Employees to a Theory of Entrepreneurial Work and MWB

The review revealed that current theorizing about the nature of entrepreneurs' work and MWB is underdeveloped, and thus calls for the elaboration of a dedicated theory of entrepreneurial work and MWB. This may be a surprising conclusion given the number of studies reviewed. Yet despite widespread recognition that entrepreneurs' work is 'different', existing research is dominated by models developed and validated to understand the MWB of salaried employees (e.g., the Job Demand Control Model, Karasek, 1979; Role Stress Theory, Kahn et al., 1964; Job Characteristics Model, Hackman & Oldham, 1975; work-related social support, House, 1981) and utilizes quantitative theory-testing studies. Applying such well-established models to entrepreneurship was an important first step in researching

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3 entrepreneurs' MWB, and is reflective of the fact that much research on entrepreneurs' MWB
4
5 has been conducted in fields outside of entrepreneurship.

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7 Yet the findings of this review suggest that these models also limit our understanding
8
9 of entrepreneurs' MWB. We need to significantly *widen* and *deepen* our view to truly
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11 understand entrepreneurs' work and MWB, and its many unique features. Specifically, the
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13 reviews findings highlight a wider set of antecedents and consequences of entrepreneurs'
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15 MWB; and they suggest insights and avenues for future research that instigate the building
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17 blocks of a theory of entrepreneurs' MWB. These insights pertain to the need to better
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19 understand the nature of entrepreneurs' MWB, the nature of their work, its enmeshment with
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21 their private life and identity, and the inherent trade-offs that these work and work-life
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23 settings entail. They also call for a more dynamic and contextualized approach to the
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25 unpacking of how, why, and for what new outcomes entrepreneurs' MWB may matter. Table
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27 3 summarizes these novel insights and opportunities for future research in the form of a series
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29 of questions. I discuss them next, along with specific examples.
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33 --- Insert Table 3 about here --
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35 **The nature of entrepreneurs' MWB.** The review reveals that particular aspects of
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37 MWB (distress and hedonic well-being) have thus far been the focus of research, to the
38
39 neglect of others (mental disorders and eudaimonic well-being). It finds that there are
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41 overlooked 'functionalities' of low MWB, and that a static view of MWB dominates
42
43 research. This calls for a more balanced perspective of entrepreneurs' MWB, and for future
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45 work to theorize about the full range of *MWB* indicators, their interplay and variability.
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48 A more refined understanding of entrepreneurs' MWB would recognize that while
49
50 high MWB is desirable, there may be *functional aspects of low MWB* that support
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52 entrepreneurs' performance. This view is inspired by studies in the review that highlight that
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54 low MWB (in the form of day-to-day negative emotions) can motivate effort with a short-
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3 term focus (Foo et al., 2009) and that particular symptoms of ADHD (a mental disorder) may
4 facilitate entrepreneurial action (Wiklund et al., 2016). Such research was scarce, probably
5 because it diverges from dominant theories that generally link positive consequences to high
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term focus (Foo et al., 2009) and that particular symptoms of ADHD (a mental disorder) may facilitate entrepreneurial action (Wiklund et al., 2016). Such research was scarce, probably because it diverges from dominant theories that generally link positive consequences to high MWB (Fredrickson, 2013; Hobfoll, 2001; Lyubomirsky et al., 2005). Yet possible 'functionalities' of low MWB, including of symptoms of mental disorders, merit more research attention for at least two reasons. First, the review suggests that high levels of demands and feelings of stress (tense, apprehensive and occasionally overwhelmed) are ubiquitous for entrepreneurs. Second, mental disorders are on the rise. If research finds that symptoms of other disorders beyond ADHD can be functional for certain aspects of entrepreneurial action, entrepreneurship research may even help to change opinion on mental disorders.

The *variability of entrepreneurs' MWB* is unexplored. Uncertainty is a hallmark of entrepreneurship (McMullen & Shepherd, 2006) and implies frequent changes. This suggests that entrepreneurs' experiences may be highly variable, and may include spikes of high and low MWB. Such variability goes unnoticed by the approaches of current research, which are focused on mean levels of MWB typically aggregated across situations. No study considered variability in MWB. Thus the antecedents and consequences of possible variability of MWB and of the relative balance between well-being and distress are virtually unexplored. By focusing solely on mean-levels we may misinterpret how well entrepreneurs feel, and we may miss important drivers of entrepreneurial action. Research on affect spin, a trait related to emotion regulation, can serve as inspiration for how to conceptualize and measure MWB variability (Uy, Sun, & Foo, 2017).

Entrepreneurs' eudaimonic well-being remains largely unexplored. This is surprising because firm performance is more likely to benefit from entrepreneurs' eudaimonic well-being (thriving and activated affect) than from their hedonic well-being (satisfaction and

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2
3 contentment). For instance, a focus on eudaimonic well-being entails dedicated theorizing
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5 about its predictors; this challenges researchers to consider hitherto unexplored concepts
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7 (such as character strengths and virtues) as relevant aspects of personality (Park, Peterson, &
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9 Seligman, 2004). It would also lead to new counterintuitive research questions relating to the
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11 MWB-enhancing effects of negative states when they are in line with one's self-concept i.e.
12
13 one's 'daimon' (Tamir, Schwartz, Oishi, & Kim, 2017). For instance, the eudaimonic MWB of
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15 competitive, growth-oriented entrepreneurs may be underpinned by feelings of pride as well
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17 as anger.
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21 Entrepreneurs consistently report high levels of *hedonic well-being* (e.g., job and life
22
23 satisfaction), which is widely depicted as a benefit of being an entrepreneur (Benz & Frey,
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25 2008). Before we celebrate this finding, it seems worth unpacking the micro-foundational
26
27 processes behind it. In particular, entrepreneurs' work has many features known to trigger
28
29 self-justification processes so as to reduce cognitive dissonance. These processes bring one's
30
31 attitudes (in the case of entrepreneurs, their satisfaction judgments) in line with past
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33 investments and choices, especially if these choices were made autonomously (Festinger,
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35 1964). It seems likely that entrepreneurs would engage in dissonance-reducing strategies.
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37 Psychologically, they may justify the large investments of time and other personal resources
38
39 that they put into their firm, and the trade-offs they are willing to make (e.g. in terms of
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41 income, leisure and family time) by seemingly deriving great satisfaction from their jobs.
42
43 Entrepreneurs' self-reports of high satisfaction may thus be indicative of being locked-in to
44
45 their career. Research could untangle such processes by adopting a balanced view of MWB
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47 (e.g., measuring eudaimonic MWB also), by obtaining assessments of entrepreneurs' MWB
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49 from others close to the entrepreneur, and by using objective indicators of MWB (see below).
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53 **The nature of entrepreneurs' work.** Future research needs to acknowledge the
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55 *variability and dynamic aspects of entrepreneurs' work*. If autonomy and uncertainty are
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3 hallmarks of entrepreneurship, then entrepreneurs' work situations are unlikely to be static.
4
5 Thus, beyond considering aggregated mean scores of work, social, personal, firm and market
6
7 resources, and stressors, what are the implications of the volatility and fluctuations in
8
9 resources and stressors for entrepreneurs' MWB? Might such variation act as a stressor in its
10
11 own right? No studies in the review investigated such aspects. However, the three
12
13 longitudinal studies in the review, which were able to test for reciprocal relationships
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15 (Gorgievski-Duijvesteijn et al., 2000; Gorgievski 2010; Örtqvist & Wincent, 2010), found
16
17 evidence for feedback loops. This reinforces the need to pay greater attention to dynamic
18
19 processes and changeability over time in understanding entrepreneur's work and their MWB.
20
21 Future research should consider measures of variability and deviation of stressors and
22
23 resources alongside mean scores.
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27 The review findings reveal a range of *unique stressors of entrepreneurs' work*, that
28
29 has not been fully recognized in past research and has yet to be theorized. Specifically,
30
31 qualitative studies identified in the review suggest that past research may have missed key
32
33 stressors important for entrepreneurs' MWB, such as customer and employee conflicts,
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35 uncertainty related to their actions, uncertainty in market demand, intense competition, and
36
37 pressures stemming from the perceived responsibility for employees (e.g., Lechat & Torrès,
38
39 2016; Schonfeld & Mazzola, 2015). Moreover, the possibility that certain types of stressors
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41 can have positive effects on MWB (Podsakoff et al., 2007) was not explored in the reviewed
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43 studies. Future research could build on the challenge-hindrane stressor framework
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45 (Podsakoff et al., 2007) to help explain entrepreneurs' high levels of MWB, despite their high
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47 levels of work stress. This may explain the ambivalent effects of long working hours found in
48
49 the review. When long hours signal that the business is going well and thriving (Bradly &
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51 Roberts, 2004), they constitute a challenge stressor linking increased demands to long-term
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53 opportunities for growth, and can be associated with positive MWB. By contrast, conflicts
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3 with customers over delayed payments would be considered a hindrance stressor that stands
4
5 in the way of entrepreneurs running their business well, with negative effects on MWB.
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7 The review indicates that *entrepreneurs' work is uniquely enmeshed with their non-*
8 *work life*, to the extent that entrepreneurs could not meaningfully talk about 'work' as a
9
10 separate life domain (Vaag et al., 2014). While the set of studies that investigate social
11
12 support and work-family balance recognize this (Parasuraman & Simmers, 2001), studies
13
14 outside of this set typically adopt an under-socialized, individualistic perspective of the
15
16 entrepreneurs in their work context. Yet one study (Berge et al., 2015) illustrated how
17
18 viewing entrepreneurship in a household context adds explanatory power: it was more
19
20 difficult to predict the performance-enhancing effect of providing business training and
21
22 micro-finance assistance to female entrepreneurs because their husbands controlled the
23
24 household finances, including the income from the wife's businesses. A related study found
25
26 similar reasons for why collective, as opposed to individual, forms of female
27
28 entrepreneurship were associated with higher MWB (Dutt et al., 2016). Conversely, for
29
30 entrepreneurs who are the sole earners of income for their family, whether they be male or
31
32 female, the perceived responsibility for their families' income and well-being may be an
33
34 added strain on their MWB. In a similar vein the strain on MWB stemming from the
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36 investments of personal resources (e.g., putting up the family home as security for a business
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38 loan) go unrecognized in the reviewed studies – despite possible dramatic consequences for
39
40 their MWB, such as suicide (Kameyama et al., 2011). Collectively these findings call for a
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42 more socialized view of entrepreneurs in their work-life contexts.
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48 For entrepreneurs, work is also an expression of their *personality* – arguably much
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50 more so than is the case for any other occupation. The high levels of autonomy and
51
52 uncertainty likely allow entrepreneurs to uniquely shape their work setting and business in
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54 line with their personality (Rauch & Frese, 2007). This calls for models of entrepreneurial
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3 work and MWB to account for personality and identity alongside work, social, firm, and
4
5 context characteristics. Future research could do so by more explicitly considering person-
6
7 situation interactions (e.g., building on person-environment fit models, Edwards, 2008 or
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9 diathesis stress models, Zuckerman, 1999). Only three studies in the review considered such
10
11 interactions (of personality with work characteristics). Beyond interactive effects, the
12
13 consideration of personality also implies dynamics which are yet to be investigated
14
15 empirically for entrepreneurs. Research on employees found that their personality can change
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17 over three to five years in response to work characteristics, such as high autonomy and job
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19 demands (Li, Fay, Frese, Harms, & Gao, 2014; Wu, 2016). These characteristics are
20
21 ubiquitous in entrepreneurs' work, calling for longitudinal research to explore when and how
22
23 entrepreneurs' work might change their personality and with what consequences for their
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25
26 MWB.

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29 Unique to research on entrepreneurs' work and MWB is the close interrelationship
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31 with the *market and competitive climate* within which they operate. While recognition of the
32
33 importance of context for entrepreneurs' MWB is increasing in terms of how frequently it is
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35 being studied, there was no agreement among the reviewed studies on what the most relevant
36
37 aspects are, how they should be captured, and through what micro-foundational processes
38
39 they influence MWB. This calls for conceptual and scale development work to make sense of
40
41 the diverse aspects of market and competitive context covered in the review. Such work
42
43 could build on conceptualizations of market context used in strategy research (Dess & Beard,
44
45 1984).

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47
48 **Unpacking the trade-offs inherent in entrepreneurs' work.** The reviewed studies
49
50 identified MWB *trade-offs across life domains*, for example, high satisfaction with work but
51
52 low satisfaction with income and leisure time (e.g., Binder & Coad, 2016). However, other
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54 trade-offs relating to entrepreneurs' work remain unexplored.
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3 Autonomy is widely depicted as a key resource underlying entrepreneurs' MWB and
4 this was corroborated in nearly all studies in the review. Yet could there be *too much*
5 *autonomy*? One qualitative study raises this possibility, and depicts entrepreneurs as
6 struggling with navigating their freedom to choose how, what, when and with whom to work
7 (Gelderen, 2016). Some studies imply a notion of 'fit', such that individuals who actively
8 chose to be entrepreneurs may reap the MWB-benefits of autonomy as opposed to necessity
9 entrepreneurs (Binder & Coad, 2013), or that optimists thrive in settings of high autonomy
10 and challenge (Totterdell et al., 2006). Yet research hardly explores the implications of
11 autonomy in terms of increased accountability and feeling responsible for employees
12 (Begley, 1994). Nor has research explored possible curvilinear effects. Might very high levels
13 of autonomy enhance uncertainty and become overwhelming, threatening and anxiety
14 provoking – in line with the paradox of choice (Iyengar & Lepper, 2000; Schwartz, 2004)?
15 There are also opportunities for research to develop our understanding and chart, over time,
16 when and how autonomy might lead to lower MWB. For instance, when it may lead
17 entrepreneurs to overexert themselves (e.g., by pursuing every possible opportunity for
18 growth); and, more generally how and when constraints on entrepreneurs' autonomy may
19 arise (e.g. in response to large contracts with a dominant customers, or large investments
20 from a particular investor, Gelderen, 2016; Reymen et al., 2015).

21
22 Two studies pointed to a possible MWB trade-off as a result of work's centrality to
23 entrepreneurs' *identity* (Fisher et al., 2013; Spivack et al., 2014). The close entwining of
24 work and identity can lead to behaviors and feelings of *obsession and addiction* to work (and
25 to 'being an entrepreneur') that are associated with low MWB. Future research should clarify
26 the generalizability of these findings, and pinpoint when and how entrepreneurs' engagement
27 and thriving develops into obsession and addiction. More generally, the pattern of findings
28 (e.g. entrepreneurs' reactions to losing their job, Hetschko, 2016) points to a close link
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3 between identity and work for entrepreneurs in line with established research on
4 entrepreneurial passion (Cardon, Wincent, Singh, & Drnovsek, 2009). Yet surprisingly, no
5 study linked passion directly to MWB, although a positive effect could be expected (Cardon
6 et al., 2009), especially for harmonious passion on eudaimonic well-being (Vallerand, 2012).

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11 What *short- and long-term productivity and health trade-offs* might there be? The
12 review finds that entrepreneurs' work is intensely demanding and stressful, yet they seem to
13 experience high levels of MWB - at least in the shorter-term. However, the constant exposure
14 to high levels of numerous stressors might predispose entrepreneurs to mental disorders and
15 diseases, and lead to low MWB in the long-term (via processes of 'allostatic load', McEwen,
16 2004). Indeed, one study provides related evidence consistent with this explanation for
17 physical health (Cardon & Patel, 2015). To avoid such long-term negative outcomes, research
18 on work-related MWB more generally highlights the importance of *recovery*. Recovery
19 research was virtually absent from the review and the declared focus of only two studies (Rau
20 et al., 2008; Taris et al., 2008). There are therefore ample opportunities for future work.

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32 Moreover, recovery processes can offer not only a unique understanding of how
33 entrepreneurs may be able to maintain high levels of MWB in the long-term, they may also
34 benefit firm performance by stimulating creativity and efficiency (Weinberger, Wach,
35 Stephan, & Wegge, 2018; Wendsche & Lohmann-Haislah, 2017). Understanding the nature
36 of the recovery processes and activities entrepreneurs engage in (especially considering their
37 time constraints) and the effects of these on MWB would be an essential part of a theory of
38 entrepreneurial work and MWB.

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Might there be a *trade-off of entrepreneurs' MWB for the well-being of their employees*? If entrepreneurs experience high levels of MWB that are associated with greater sensitivity to recognizing opportunities (Gielnik et al., 2012), might this imply a negative effect on their employees' MWB? From a work design perspective, new opportunities are

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3 likely to involve new work processes, and growing businesses often struggle to hire
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5 employees at the same rate at which they expand, meaning a higher workload for and further
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7 demands on those that already work for the entrepreneur. A contrasting prediction might be
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9 derived from research on emotional contagion processes (Van Kleef, 2009), whereby the
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11 entrepreneurs' positive MWB would crossover to employees. Even though employees form
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13 an integral part of a firm, no studies in the review addressed such relationships. Thus, there
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15 are opportunities for future research to discern how and when entrepreneurs' MWB affects
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17 the MWB of their employees.
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20 **Contextualizing research on entrepreneurs' MWB.** The review reinforces calls to
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22 consider heterogeneity among entrepreneurs (Davidsson, 2016) and to develop context-
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24 sensitive theories (Zahra & Wright, 2011; Welter, 2011). It extends such calls to research on
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26 entrepreneurs' MWB. With regard to heterogeneity among entrepreneurs, the review findings
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28 highlight differences between *types of entrepreneurs*. Studies identified systematic variation
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30 in MWB between opportunity and necessity entrepreneurs (broadly defined). Other studies
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32 linked related concepts of intrinsic motivation and values (e.g., creativity and non-financial
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34 success) to higher MWB. There are untapped opportunities to unpack and theorize the
35
36 specific profile of the MWB challenges and resources for different types of entrepreneurs.
37
38 For instance, compared to self-employed sole-trader, growth-oriented employer-
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40 entrepreneurs face more complex work, greater responsibility pressures for employees, and
41
42 steeper competition in the market. Necessity entrepreneurs might grapple more with resource
43
44 constraints. It is unclear under what circumstances and over what timeframe necessity
45
46 entrepreneurs would derive performance benefits from MWB, if at all? Social entrepreneurs
47
48 may be well-positioned to experience high MWB since helping others is highly meaningful
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50 work, but this may also suggest that they are at particular risk of burnout. At the same time,
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3 their own mental health challenges may act as a resource, helping them to recognize and
4
5 develop social entrepreneurship opportunities.
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7 Although several studies documented significant *differences in entrepreneurs' MWB*
8 *across countries*, it is by and large unclear *how* these country differences may be explained.
9
10 This is another opportunity to build a more contextualized theory of entrepreneurs' MWB. It
11
12 could explore the role of formal institutions and culture, and discern through which processes
13
14 they affect entrepreneurs' MWB. For instance, two studies investigated the effect of
15
16 regulation, with differing findings (Anderson & Hughes, 2010; Kallioniemi et al., 2016) .
17
18 Might it be that regulation influences entrepreneurs' MWB especially when it is perceived as
19
20 unjust (e.g., entrepreneurs may feel 'punished' by a plethora of administrative rules and
21
22 regulations, even though they are the ones creating jobs, often at considerable cost to their
23
24 private and family life). Other formal institutions, such as the rule of law, alleviate
25
26 uncertainty (Estrin, Korosteleva, & Mickiewicz, 2013) and may thus support entrepreneurs'
27
28 MWB. Culture may also shape effects. For instance, entrepreneurs' own MWB may be less
29
30 important for firm performance in more collectivistic cultures, where performance will be
31
32 more contingent on multiple others beyond the entrepreneur (Stephan & Uhlaner, 2010).
33
34 Moreover, the role of context in shaping the *consequences* of entrepreneurial MWB was
35
36 unexplored in the review. Yet establishing boundary conditions as to when entrepreneurs'
37
38 MWB matters for outcomes is an essential step toward a theory of entrepreneurs' MWB.
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44 **Expanding our understanding of the consequences of entrepreneurs' MWB.** The
45
46 consequences of entrepreneurs' MWB were the focus of far fewer studies in the review
47
48 compared to research on the antecedents of MWB. There is a need to establish stronger
49
50 evidence for the causal relationships from MWB to performance, and to map the intervening
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52 micro-level processes more carefully. Future research should also explore consequences of
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54 MWB beyond those studied in the review. This would allow us to develop a deeper
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3 understanding of why entrepreneurs' MWB matters, and would help to further legitimize
4 MWB as an important area of entrepreneurship research. For instance, *crossover effects* from
5 entrepreneurs' MWB to the MWB of their stakeholders (e.g., customers, suppliers, investors,
6 board members) are unexplored (see Figure 2). These may take the form of emotional
7 contagion processes as discussed above for employees. Similarly, future research could
8 establish how and when entrepreneurs' MWB may relate to *collective outcomes*, such as the
9 business climate or trust in a community.
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18 Research existing outside of entrepreneurship provides insights on how such
19 outcomes may evolve. Happy people are more inclined to help others through *prosocial*
20 *behaviors* and engagement in their communities (Lyubomirsky et al., 2005). The broadening
21 of thought repertoires (Fredrickson, 2013) and increased psychological resources (Hobfoll,
22 2001) associated with MWB seem to also enable more perspective taking. A single study in
23 the review explored such a relationship for entrepreneurs, and found that higher MWB was
24 associated with more tolerance/lower prejudice towards an outgroup (Tobias et al., 2013).
25
26 This suggests intriguing links and new pathways for research on entrepreneurship,
27 philanthropy, and social entrepreneurship whereby the everyday experiences of 'happy'
28 entrepreneurs lead to prosocial entrepreneurial actions. This contrasts with existing
29 explanations of, for instance, social entrepreneurship that emphasize stable prosocial traits or
30 motivations (Stephan & Drencheva, 2017).
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44 To understand the consequences of entrepreneurs' MWB, future research also needs
45 to consider theoretical perspectives beyond those dominating current research (Conservation
46 of Resources [COR, Hobfoll, 2001], and Broaden-and-Build [Fredrickson, 2013]). This is
47 because both theories link positive outcomes to high levels of MWB, and may lead
48 researchers to overlook potential functional effects of low levels of MWB (as identified in the
49 review and discussed above) as well as possible detrimental effects of *high* MWB. An
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3 example requiring new conceptual angles are the effects of entrepreneurs' MWB on *ethical*
4 *decision-making and transgressions*. For instance, research on creative entitlement and
5
6 ethical behavior (Vincent, Emich, & Goncalo, 2013) suggests that entrepreneurs with *high*
7
8 MWB who lead innovative firms might engage in unethical behavior, because they are likely
9
10 to feel unique, 'invincible', and above the law. At the same time, entrepreneurs' work,
11
12 especially feelings of time pressure, or pressures to find new contracts, may also lead to
13
14 ethical transgressions (individuals are more likely to 'cut corners' when under pressure,
15
16 Kouchaki & Desai, 2015).
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20 **Towards greater plurality of research designs and methods.** Research on
21
22 entrepreneurs' MWB is dominated by quantitative cross-sectional self-report based theory
23
24 testing studies. The dominance of any method limits the type of insights to be gained. Future
25
26 research should continue the trend towards more diversity in methodological approaches.
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29 The review suggests that the understanding of entrepreneurs' work and MWB may
30
31 still be incomplete and there is scope for more theory-building work, which could be based
32
33 on longitudinal qualitative studies to map the nature of MWB, its resources and demands, and
34
35 the variability of resources and demands over time. There could also be a role for
36
37 observational 'work shadowing' studies and ethnographic work, to investigate work as
38
39 entrepreneurs encounter it day-to-day. Such research may also seek the views of others on
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41 entrepreneurs' MWB to triangulate entrepreneur self-reports.
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44 Experience sampling studies, longitudinal and process studies seem well suited to
45
46 explicating the microfoundations (Shepherd, 2015) of MWB. They facilitate unpacking the
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48 micro-level processes as well as the testing of reciprocal and dynamic relationships. This will
49
50 enable constructing of a truly dynamic understanding of entrepreneurial work and MWB, and
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52 will complement the current dominance of static perspectives.
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3 There are opportunities to use physiological measures based on wearable technologies
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5 to circumvent possible self-report biases of entrepreneurs' MWB. Physiological measures can
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7 capture recovery, stress, and emotional micro-level processes of entrepreneurs' MWB. They
8
9 can complement diary or experience sampling studies (Eatough, Shockley, & Yu, 2016;
10
11 Weinberger et al., 2018) or be incorporated in longitudinal studies (Cardon & Patel, 2015).

12
13 Future research should pay attention to 'time'. Theorizing about the time spans over
14
15 which aspects of MWB, perceptions of autonomy, social support, and other characteristics
16
17 remain stable or change is essential when choosing appropriate time lags for diary,
18
19 longitudinal and process studies (Dormann & Griffin, 2015; Uy, Foo, & Aguinis, 2010).
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21 Longitudinal research in the review varied from covering one or two years, to up to 10 years;
22
23 while experience sampling studies covered time frames of days and weeks. For example,
24
25 employee studies observed personality change over three and five years (Li et al., 2014; Wu,
26
27 2016). However, such processes may be more fluid for entrepreneurs faced with uncertainty
28
29 and enjoying autonomy and changes may be identifiable over shorter periods.
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33 Finally, there is a role for multi-level studies to help pin-point what causes the
34
35 variation of entrepreneurs' MWB across country contexts. Multi-level studies will be helpful
36
37 for research relating entrepreneurs' MWB to that of their employees and other stakeholders.
38

39 **Conclusion**

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41 Through taking stock of what we know, this review hopes to inspire more work on
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43 entrepreneurs' MWB and stimulate efforts to develop a theory of entrepreneurial work and
44
45 MWB that highlights the uniqueness of entrepreneurship - acknowledging entrepreneurs'
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47 dynamic and fluid work-life setting, the centrality of work for their sense of identity, as well
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49 as the importance of others and their context.
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Table 1. Overview of Review Findings on the Antecedents of Entrepreneurs' Mental Health and Well-Being (MWB)

Antecedent	Effect on MWB				Total N of studies	N stronger research designs ¹	Notes
	+	0	-	Other			
Work characteristics²					49	13	
<i>Resources</i>							
Autonomy	18*	2**			20	4	*In Parslow et al. (2004) autonomy had a positive effect only for self-employed women, not for self-employed men; **see manuscript text
Time flexibility	3	1*			4		*No effect when considered alongside autonomy in Parasuraman and Simmers (2001), but additional positive effect alongside autonomy in Hundley (2001) and Alvarez and Sinde-Cantorna (2014)
Skill utilization	2	1*			3		*No effect in Wallis and Dollard (2008): farm-specific resources explained MWB instead
Significance/ meaningfulness	5			2*	7		*Two studies report findings suggestive of 'inverse U' relationship, see manuscript text
Variety/ interesting work	4				4		
Task identity		1			1		
Feedback	2				2		
Positive work resources	1				1		
<i>Stressors</i>							
Demands	1*	2**	19		22	3	*Positive effect for new entrepreneurs: demands seemed to signal that the business is going well (Bradley & Roberts, 2004), **see manuscript text
Role stressors			6		6		
Long/ intense working hours	2*	1	8	2	13	1	*See manuscript text for positive effects and discussion of recovery effects
Personal characteristics²					53	14	
<i>Traits</i>							
<i>Resources</i>							
Psychological capital	4				4	1	Two studies investigated the psychological capital construct; one study each investigated constituent traits (hope, self-esteem).
Self-efficacy	3			1*	4	2	*See manuscript text
Optimism	1		1*	1*	3	2	*See manuscript text
Emotional intelligence/ trait emotion regulation	3		1	2*	6	1	*Emotional intelligence mitigates the negative effects of fear of failure (Bahmannia et al., 2013); affect spin, as an emotional experience pattern that requires emotion-regulation resources is related to distress (Uy et al., 2017)
Coping	4				4	1	See manuscript text for distinct effects of different coping styles.
Internal locus of control	3*				3	1	*Indirect effect of internal locus of control on distress via role stress in one study (Wincent & Örtqvist, 2009).
Risk tolerance	2				2	0	

Running Head: ENTREPRENEURS' MENTAL WELL-BEING (MWB)

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Antecedent	Effect on MWB				Total N of studies	N stronger research designs ¹	Notes
	+	0	-	Other			
Three Big 5 traits: agreeableness, extraversion, conscientiousness	2				2	0	No relationships for openness to experience (Berglund, Johansson Sevä, & Strandh, 2016; Morrison, 1997). For emotional stability see findings below for 'neuroticism'.
Innovativeness	2				2	0	
Positive affect	1				1	1	
Vulnerabilities							
Neuroticism, negative or depressed affect			5	1*	6	1	*Being emotionally unstable was recognized by entrepreneurs themselves as a vulnerability (Ahmad & Arabia, 2010)
Fear of failure			1		1	0	
Human capital					13	5	
Resources							
Stress/ self-management skills	2				2	2	
Business & entrepreneurial skills	1			2*	3	1	*Lack of business skill recognized by entrepreneurs as stressor (Ahmad & Arabia, 2010; Vaag et al., 2014)
Entrepreneurship/ Leadership Experience	1		1	2	4	0	See manuscript text for explanation of mixed results
Education	1		2	2*	5	2	* Higher education mitigated the negative effect of financial problems on well-being (Annink et al., 2016); perceived mismatch between highest degree and current work was associated with lower work satisfaction (Bender & Roche, 2013)
Values and motivations					12	0	
Resources							
Specific intrinsic values	5				5	0	Intrinsic values include values of autonomy, creativity, and well-being
General intrinsic motivation	6				6	0	Includes valuing non-financial success
Meeting own expectations & goals	3				3	0	
Valuing achievement	1				1	0	
Vulnerability							
Valuing financial success, money & extrinsic motives			3		3	0	
Other personal characteristics					8	2	
Physical health & health behaviors	5	1*			6	1	*One longitudinal study found no relationship between height as a proxy for good physical health and entrepreneurs' MWB (Rietveld, Hessels, & Van der Zwan, 2015)
Immigrant entrepreneur	2				2	1	
Firm and financial characteristics²					37	15	

Antecedent	Effect on MWB				Total N of studies	N stronger research designs ¹	Notes
	+	0	-	Other			
Resources							
Financial rewards/income	6				6	2	
Perceived firm success	5*			1**	6	1	* Measured in one study as entrepreneur reports of firm productivity (Sherman, Randall, & Kauanui, 2016) **qualitative research, see manuscript text
Objective firm performance		1*	1*		2	1	*See manuscript text for explanation
Number of employees	3		1*		4	3	*See manuscript text for explanation
Financial resources (loan)			1*	1	2	2	*See manuscript text for explanation
Stressors							
Financial problems		1	7	1	8	4	See manuscript text for detailed findings
Low pay/income			3		3	0	
Job loss			5		5	4	Includes studies on unemployment and retirement
Job insecurity/uncertainty			5		5	1	
Other			2*		2	0	*Income uncertainty and perceived financial responsibility (for self and family) identified as stressors in qualitative studies (Sörensson & Dalborg, 2017; Schonfeld & Mazzola, 2015).
Social resources and stressors²					25	6	
Resources							
Social support/ low loneliness	11			2*	13	3	*Moderating effect of social capital: social capital mitigates the negative effect of fear of failure on work stress in non-family owned businesses (Bahmannia et al., 2013). Work-related social support buffered the effect of exhaustion on job satisfaction (no effect of exhaustion when work-related support was available, Tetrick et al., 2000).
Work Family Enrichment (WFE)	3				3	1	
Positive feedback from customers				2*	2	1	*Feedback from clients emerged as source of MWB in qualitative studies (Anderson & Hughes, 2010; Lechat & Torrès, 2017).
Stressors							
Work Family Conflict (WFC)			8	1*	9	2	*Negative effect of WFC on MWB for women entrepreneurs only.
Family conflicts			1		1	0	
Customer & employee conflicts				2	2	1	
Partner control			1		1	0	
Responsibility for people at work			1		1	0	

Antecedent	Effect on MWB				Total N of studies	N stronger research designs ¹	Notes
	+	0	-	Other			
Context characteristics²					25	6	
Business climate/ market demand	2			3	5	2	
Economic recession		1	3		4	0	
High levels of market competition			2		2	2	
Societal esteem of entrepreneurs	2			1*	3	0	*Moderating effect, see manuscript text
Regulation	1		1		2	0	Regulation to enhance competitiveness was positively related to entrepreneurs' MWB across countries (Cuellar-Molina, Lucia- Casademunt, & Garcia-Cabrera, 2015), but individual entrepreneurs experienced regulation as strain on MWB (Kalliomeni et al., 2016)
Shock	1		4		5	2	see manuscript text
Other				6	6	0	Entrepreneurs' MWB varies across countries (Benz & Frey, 2008; Schneck, 2014) and industries (Rau et al., 2008). Labour market flexibilization affects entrepreneurs' MWB less than employees MWB (Obschonka & Silbereisen, 2015). Social and religious obligations in the community were stressors for female entrepreneurs (Ugwu et al., 2016). Country differences in unemployment insurance and social trust moderated the effects of financial hardships on MWB (Annink et al., 2016).
Physical environment²					4	0	
Resource							
Being in nature	1				1	0	
Stressor							
Physical demands, workload & danger			4		4	0	

Notes.

¹ longitudinal, lagged, experimental, experience sampling studies

² Individual studies may contain information on more than one characteristic. Hence, the total number of studies for a cluster of characteristics may be smaller than the sum of studies across each of the individual characteristics.

Table 2. Overview of Review Findings on the Consequences of Entrepreneurs' MWB

Outcome	Consequence of MWB				Total N of studies	N with stronger research designs ¹	Notes
	+	0	-	Other			
Performance-related outcomes²					28	10	
Persistence	6*		1**		7	3	*In one study this effect was contingent on social capital. **One descriptive study without controls.
Firm performance	7		1		8	3	
Opportunity recognition	5		1*		5	0	*In Foo (2011) happiness and anger had the same effects on opportunity recognition.
Effort towards goals	2		1*		2	1	*In Foo et al (2009) both positive and negative affect facilitated effort but towards different goals.
Absenteeism	2				2	0	
Proactive behaviors	1				1	1	
Outcomes for the entrepreneur (ill health, stress)			2		2	2	
Outcomes for others (partners, children, tolerance towards others)	3		1		4	2	

*Notes.*¹ longitudinal, lagged, experimental, experience sampling studies² Individual studies may contain information on more than one outcome. Hence, the sum of studies across the individual outcomes appears greater than 28.

Table 3. Entrepreneurs' MWB: Summary of Opportunities for Future Contributions (elaborations in manuscript text)

The nature of entrepreneurs' MWB

- What are possible '*functionalities*' of low MWB? In what way are feelings of distress, discontentment, and symptoms of mental disorders (beyond ADHD) 'functional' to motivate entrepreneurial actions and for positive outcomes?
 - What are the consequences of the *variability and balance between well-being and distress*? Are they related to entrepreneurs' performance and resilience, and if so, how?
 - Greater attention to *entrepreneurs' eudaimonic well-being* (e.g., thriving, meaning, self-realization): What are the specific antecedents of entrepreneurs' eudaimonic well-being?
 - To what extent is the high *hedonic well-being* of entrepreneurs driven by self-justification processes to reduce *cognitive dissonance*?
-

The nature of entrepreneurs' work (stressors and resources relevant for MWB)

- What role do *volatility and fluctuations* in stressors and resources play for entrepreneurs' MWB – beyond considering their mean levels?
 - Are we investigating the '*right kind*' of stressors? What stressors might act as challenge or hindrance stressors, and when and how?
 - How should we conceptualize the enmeshment of entrepreneurs' work with their *private and social life*? Can this help to explain MWB differences between the genders?
 - How can we incorporate *firm and market context* into theories of entrepreneurs' work?
 - How do entrepreneurs' craft their own work, social, financial demands, and resources?
 - When and how might entrepreneurs' work change their *personality*?
-

Unpacking the trade-offs inherent in entrepreneurs' work

- When and how might *autonomy* have potential detrimental effects? Are there curvilinear effects? When and how might autonomy lead entrepreneurs to overexert themselves?
 - How can the centrality of entrepreneurs' work for their *identity* be better recognized? How might entrepreneurs' passion and thriving develop into *obsession and addiction*?
 - What *short- and long-term productivity and health trade-offs* are there? What is the role of *recovery*? What recovery processes and activities do entrepreneurs engage in?
 - Are there trade-offs between entrepreneurs' MWB and the MWB of their employees?
-

Contextualizing research on entrepreneurs' MWB

- What are the MWB resources and stressors associated with *different types/forms of entrepreneurship* (e.g., growth-oriented, necessity, social, informal, family business)?
 - How can the documented MWB *differences across countries* be explained? What role do formal institutions and culture play? Through which processes do they affect MWB?
-

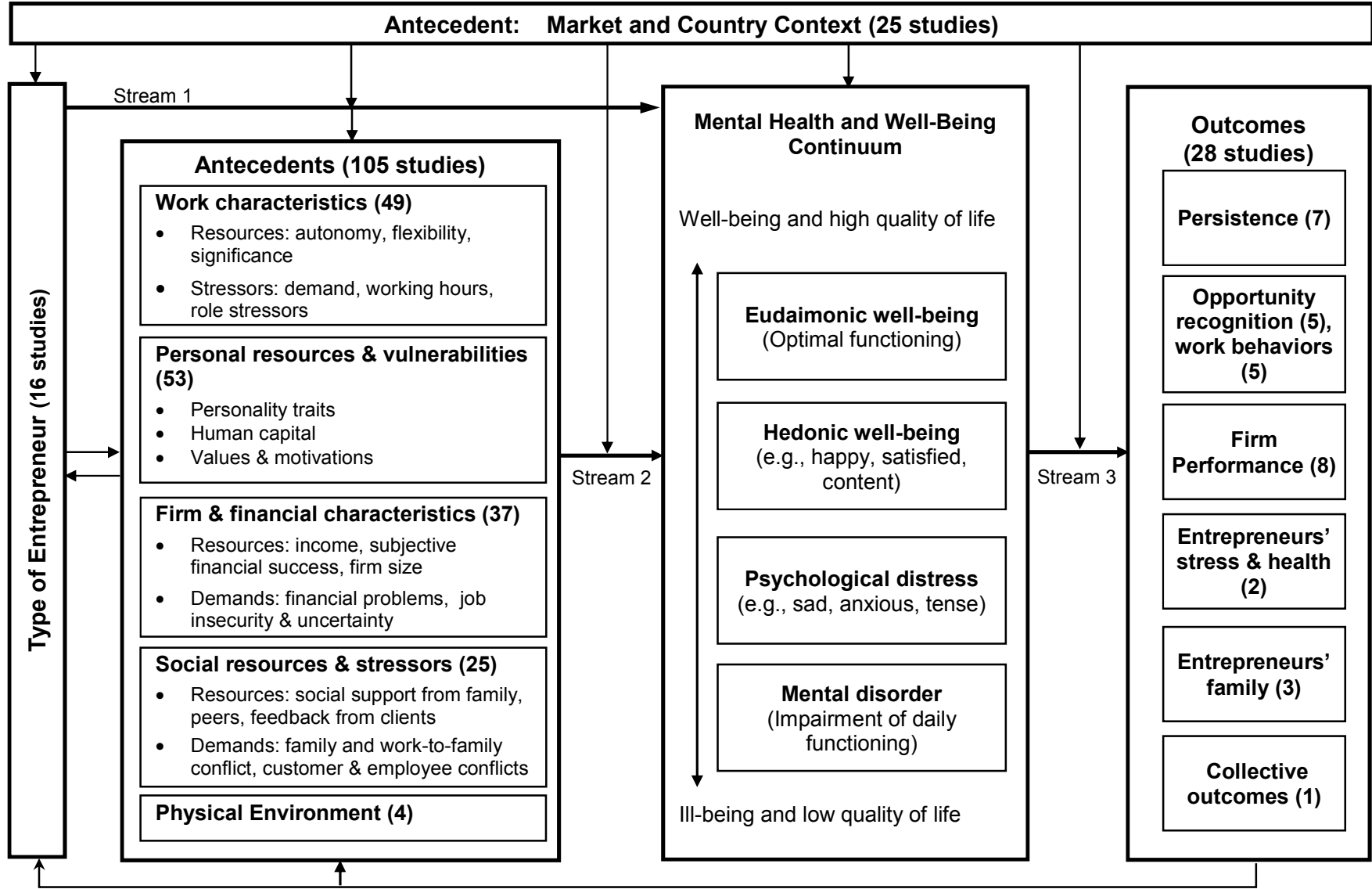
Expanding our understanding of the consequences of entrepreneurs' MWB

- Beyond opportunity recognition, effort, and performance, what other outcomes does entrepreneurs' MWB affect?
 - (How) Does entrepreneurs' MWB create *crossover effects*, influencing the MWB of their stakeholders? (How) Does entrepreneurs' MWB relate to *collective outcomes*? How does MWB relate to *prosocial behavior, ethical decisions, and transgressions*?
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Towards greater plurality of research designs and methods

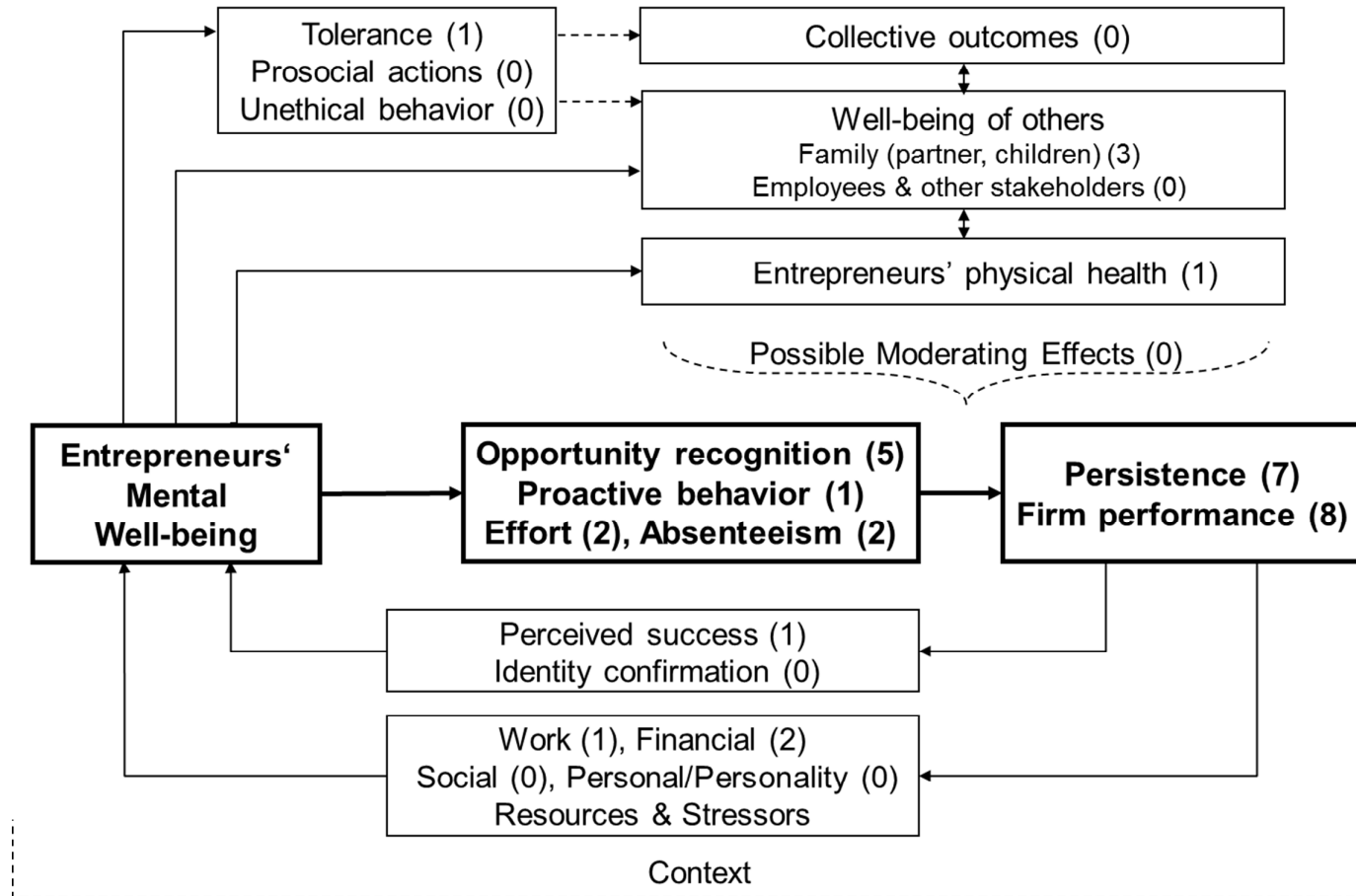
- What methods can complement the current dominance of theory-testing and cross-sectional research? Experiment with longitudinal qualitative research, ethnography, work-shadowing, physiological and other-ratings of entrepreneurs' MWB.
 - Over what time-frame should longitudinal, process, and diary-studies be conducted to capture micro processes, changes in MWB, its antecedents and consequences?
 - Use multi-level studies to unpack influences of national or community contexts on entrepreneurs' MWB, and to discern how entrepreneurs' MWB affects their employees.
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Figure 1. Overview of Research on Entrepreneurs' MWB: Research Streams and Examples of Concepts Studied (Number of studies in brackets)



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Figure 2. Consequences of Entrepreneurs' MWB: Summary of Review Findings, Gaps and Possible Dynamic Relationships



Note. Bold font highlights the most frequently researched concepts and relationships. Numbers in brackets indicate the number of studies in the review reporting relevant evidence. Dashed lines indicate newly proposed relationships. All relationships refer to the individual-level, except relationships with firm-performance (individual to firm level), relationships with the well-being of others (which imply crossover effects from the individual entrepreneur to others), and relationships with collective outcomes (which imply individual to collective-level relationships). See manuscript text for details.

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