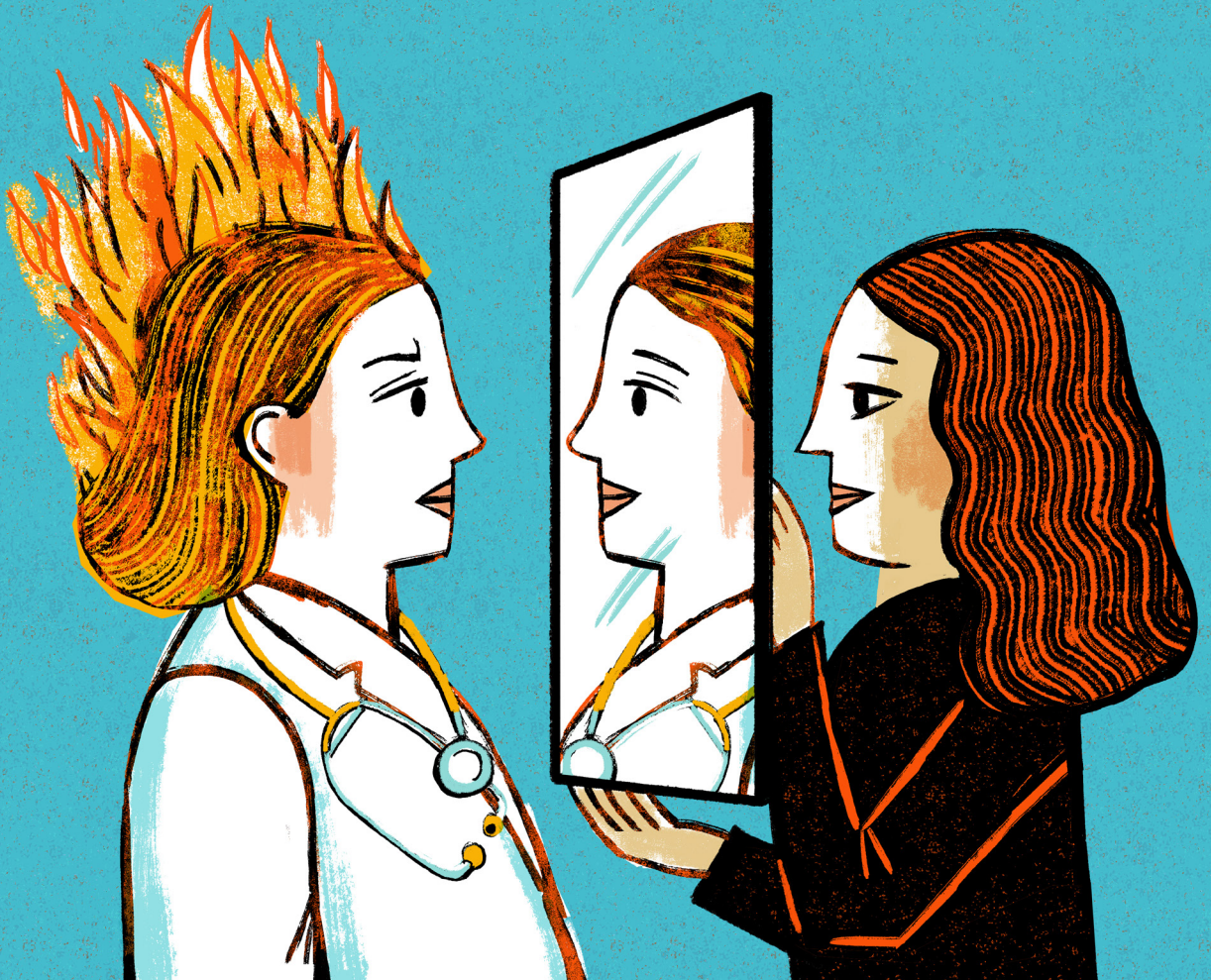# Coaching

for Better Physician Well-Being

Lara Solms

Coaching for Better Physician Well-Being

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Coaching for Better Physician Well-Being

Coaching voor een beter welzijn van artsen

Proefschrift

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CHAPTER ONE

INTRODUCTION

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Physician burnout has reached global epidemic levels, fueling concerns about physician health and functioning as well as their long-term employability (Rotenstein et al., 2018; Shanafelt et al., 2015, 2022). The World Health Organization (WHO, 2019) has recognized burnout, a syndrome of emotional exhaustion, cynicism, and reduced professional efficacy (Maslach et al., 2001), as an occupational phenomenon resulting from chronic workplace stress. While burnout is not limited to specific professions, healthcare professionals seem particularly at risk due to the stressful and emotive nature of their work (Maslach et al., 2001). Working in a complex and high-pressure system, they face extensive job demands such as continuous time pressure, shift work, the need to make life-and-death decisions, anxiety, pain and suffering from patients, and—at times—inability to help. Apart from the evident demands present in healthcare, physicians also need to manage excessive clerical workloads caused by increased documentation and scrutiny, electronic health records (EHR), and "desktop medicine" (Downing et al., 2018; Shanafelt et al., 2017; Tai-Seale et al., 2017, p. 655), as well as tasks unrelated to patient care such as leadership, teaching, and research (Schneider et al., 2014).

While the demands in the medical work environment are high, support is often insufficient: Physicians experience a lack of support from their managers and colleagues, insufficient autonomy and flexibility in their work, and only little room for non-medical skills learning, including leadership skills and personal development (Novack et al., 1999; Stoller, 2009; West et al., 2018, for a review). The extensive demands, paired with a lack of resources and little attention to personal growth and development, leave physicians exhausted at the end of the working day. It is no surprise that physician burnout is at an all-time high, starting with residents (Dyrbye et al., 2014; De Jonge Specialist, 2022; Thomas, 2004). Yet, burnout is not limited to physician practice: Even medical students are increasingly at risk and commonly report symptoms of burnout (Dyrbye & Shanafelt, 2016). Apart from the negative consequences for physicians' health and well-being, burnout also obstructs their careers through long-term absenteeism. Some even leave the medical profession altogether (Landon et al., 2006). This is not only costly but also a societal

problem, as it further exacerbates the healthcare workforce shortage (Han et al., 2019; Sinsky et al., 2022; Zhang et al., 2020). In addition, physician burnout has severe impact on the delivery of patient care: Burned-out physicians are more likely to engage in unprofessional behaviors and are more likely to be involved in patient safety incidents, including medical errors (Hall et al., 2016; Hodkinson et al., 2022; Salyers et al., 2017). Altogether, the stressful demands, lack of resources, and little attention to personal development in healthcare pose a threat not only to the well-being and careers of individual physicians but also to the organizations in which they work and the patients for whom they care. In response to these challenges, the *primary aim of this dissertation is to identify effective strategies to promote the well-being of physicians*.

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Working in Healthcare – A Job Demands-Resources Perspective

While the day-to-day work of physicians is extraordinarily demanding, many physicians show exceptional passion and dedication in caring for their patients. In fact, their high levels of work engagement—a "positive, fulfilling state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli et al., 2002, p.74)—tend to be higher than those of other professionals (Hakanen et al., 2019). Such work engagement is not only linked to better performance across occupations, including healthcare (Christian et al., 2011; Loerbroks et al., 2017; Salanova et al., 2005; Xanthopoulou et al., 2009b) but also functions as a protective factor for patient care (Prins et al., 2009).

Work engagement is often referred to as the positive opposite of burnout (Schaufeli & Bakker, 2004). Burned-out professionals are everything that engaged professionals are not: They lack energy and enthusiasm, have developed a cynical and distant attitude toward their work, and feel professionally inefficient (Bakker et al., 2014). Although work engagement and burnout are considered independent constructs (Bakker et al., 2014), it is not surprising that they are negatively correlated across occupations, including

healthcare (Agarwal et al., 2020; Junker et al., 2021; Schaufeli & Bakker, 2004; Vander Elst et al., 2016). The understanding and prediction of these two constructs lie at the heart of the Job Demands-Resources theory (JD-R; Demerouti et al., 2001; Bakker & Demerouti, 2017).

The core assumption of JD-R theory is that work characteristics fall into one of two categories: They are either demands or resources. While extensive job demands are regarded as the prime factor leading to burnout, job resources are considered the main factor for work engagement (Bakker & Demerouti, 2007). *Job demands* refer to "physical, social or organizational aspects of the job that require sustained physical, or mental effort and are therefore associated with certain physiological and psychological costs" (Demerouti et al., 2001, p. 501). For example, emotionally demanding patient interactions or the clerical workload are typical job demands for physicians (Shanafelt et al., 2017). Managing such job demands is resource-intensive for employees, which can be damaging if employees cannot replenish and recharge their resources in time, or if job demands overburden employees to the point that recovery becomes impossible (Demerouti et al., 2001; Hobfoll et al., 2018). Eventually, a process of health impairment sets in, with burnout as a possible consequence (Demerouti et al., 2000). *Job resources* refer to "physical, psychological, social or organizational aspects of the job that are either/or functional in achieving work goals, reduce job demands and the associated physiological and psychological costs [or] stimulate personal growth, learning and development" (Bakker & Demerouti, 2007, p. 312). For example, support from peers and managers, autonomy, and learning opportunities are typical job resources. Such job resources serve a dual purpose of meeting job demands on the one hand and boosting growth and learning on the other hand, ultimately increasing work engagement. If physicians possess sufficient resources, such as strong support networks or developmental opportunities, they can use these resources to cope with job demands (Bakker et al., 2005; Russell et al., 1987) while safeguarding their work engagement (Scheepers et al., 2017).

It is important to note that resources are not limited to one's job or the physical work environment; rather, people possess and can create resources themselves (Hobfoll, 1989). From this perspective, personal resources such as resilience, self-efficacy, and self-compassion are particularly relevant (Hobfoll, 1989; Mache et al., 2014; Neff et al., 2020). That is, these resources reflect peoples' perceptions of control over the environment (Hobfoll et al., 2003; Xanthopoulou et al., 2007) and promote work engagement and buffer against the negative impact of high job demands (Tremblay & Messervey, 2011). To illustrate, physicians who can bounce back from adverse events (i.e., are resilient), believe in their skills and capabilities (i.e., are self-efficacious), and are not only compassionate to the suffering of others but also to themselves (i.e., are self-compassionate) will be more likely to stay engaged and better equipped to deal with high job demands (Babenko et al., 2019; Holmberg et al., 2020; Mache et al., 2014). Viewing physicians' work characteristics through the lens of JD-R theory, I examine which job and personal characteristics promote or thwart physician well-being and functioning.

> **Research question 1:** *What are risk and protective factors of physician well-being?*

Taken together, JD-R theory provides a comprehensive yet flexible framework for understanding how physicians' work characteristics and personal resources may affect well-being and motivational outcomes, both of which are critical for patient care. Importantly, it can provide insight into both the causes and consequences of physician burnout and, as such, can offer concrete starting points for individual-level and organization-level interventions that can help to mitigate burnout.

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Coaching – A Remedy for Physician Burnout?

Given the high prevalence of burnout among physicians and the high-stakes consequences of their functioning, it is critical to understand how physicians can best be supported in their work. Offering interventions aimed at job demands and job and personal resources can be part of such support (West et al., 2018). While system-level changes—addressing medical culture or excessive workloads—are also needed to tackle some of the root causes of physician burnout (Montgomery, 2014), individual-level (i.e., physician-directed) interventions can help to decrease job demands and to increase job and personal resources. In the past, individual-level interventions, such as stress management, mindfulness, self-care, or training, have shown small effects in reducing burnout (Panagioti et al., 2017; West et al., 2016). Yet, given the high stress that physicians face on a daily basis, individual-level interventions can only add long-term value if they not only alleviate burnout symptoms at a particular point in time but also provide physicians with resources and tangible strategies that sustainably promote their well-being. If physicians can resort to such resources and strategies with relative ease, they can more effectively manage their job demands and thus protect their well-being. Individual coaching is a workplace intervention that seems promising in this regard.

Coaching has gained popularity since the early 2000s due to the increasing interest in individual well-being and thriving. With the rise of positive psychology, scientists and practitioners were no longer only interested in the treatment and prevention of illness but increasingly saw added value in promoting individual well-being, happiness, growth, and thriving (Seligman & Csikszentmihalyi, 2000). Accordingly, interventions were developed that focused on these very outcomes. Coaching as a workplace intervention has since enjoyed increasing popularity: With 50.000 professional coaches around the globe that have been certified by the International Coach Federation (ICF)—a twofold increase since 2015—coaching as a service and as a profession continues to grow (International Coaching Federation, 2021). Coaching is defined as "a collaborative solution-focused, result-oriented and systematic

process in which the coach facilitates the enhancement of life experience and goal attainment in the personal and/or professional life of normal, non-clinical clients" (Grant, 2003, p. 254) and is an intervention in which self-directed change is central (Theeboom et al., 2017). Coaching equips people with "tools, knowledge, and opportunities they need to develop themselves and become more effective" (Peterson & Hicks, 1996, p. 14, as cited in McLean et al., 2005). While coaches are facilitators of the process, coaching clients (i.e., the coachees) are considered to be able to develop their own strategies and solutions (Berg & Szabo, 2005). Under the guidance of a coach, clients seek to make sense of the world around them and apply this knowledge to their unique situations (Du Toit, 2007). As such, coaching is highly participatory and client-driven.

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The effectiveness of coaching for improving well-being and functioning has been demonstrated repeatedly in both professional and educational contexts (Jones et al., 2016; Theeboom et al., 2014). Various studies and meta-analyses reported improvements in coping and well-being, including stress and burnout, as well as increases in goal achievement, skill development, and performance (Grant, 2003, 2014; Jones et al., 2016; Theeboom et al., 2014). These promising findings suggest that coaching can be effective across various clients and contexts. Yet, despite the high uptake of coaching across professions and its proven effectiveness, physicians are less likely to seek personal support generally (Bynum & Sukhera, 2021) and may, therefore, also be less likely to participate in coaching. This may be due to a professional culture that promotes perfectionism and lack of vulnerability at the cost of self-care and individual health ("*To err is human, but we are superhuman*"; Shanafelt et al., 2019, p. 1559). As such, support-seeking is vastly stigmatized (Brower, 2021; Kirch, 2021; Sukhera et al., 2022), and physicians are reluctant to seek help when needed (Dyrbye et al., 2015; Gold et al., 2016). Additionally, coaching in healthcare is typically used as a last-resort intervention for employees on the verge of burnout. In this dissertation, I examine coaching of physicians from a perspective in which coaching is provided throughout physicians' careers and tailored to their short-term but also long-term needs.

Additionally, I investigate the added value of coaching compared to other types of support programs.

> **Research question 2:** *Does individual coaching improve physician well-being and functioning?*

> **Research question 3:** *What are the benefits of coaching compared to other support interventions?*

Finally, we need a deeper understanding of "how coaching works" in order to unpack the potential benefits of coaching for physicians and their respective organizations.

Mechanisms of Coaching

With coaching becoming more and more popular as a developmental intervention for employees across the ranks of organizations, the demand for demonstrating and understanding its effectiveness has also increased. After all, coaching is a short (typically six sessions) but expensive endeavor, raising questions about its return on investment (De Meuse et al., 2009; Grant, 2012b). As such, numerous studies, including randomized-controlled studies, have examined the effects of coaching at the workplace and beyond (for a review, see Jones et al., 2016; Theeboom et al., 2014). While these studies showed that coaching "worked", i.e., increased affective (e.g., self-efficacy), cognitive (e.g., attitudes), and behavioral outcomes (e.g., skills and performance), they gave little insight into *how* it worked. In fact, research examining the boundary conditions of successful coaching (i.e., when and for whom does coaching work?) and its underlying psychological mechanisms (i.e., what happens in coaching that leads to positive client change?) is still lacking. Hence, coaching has so far remained a black box (Bachkirova et al., 2015; Bozer & Jones, 2018; Jones et al., 2016; Theeboom et al., 2014).

Several factors may affect coaching effectiveness. In line with the understanding of coaching as a joint, collaborative process (Spence & Grant, 2007), both client and coach individually (e.g., the amount of effort the coachee puts into the change process or the methods and techniques the coach uses) as well as in dyadic interaction (e.g., their relationship) may aid or hinder successful coaching. Focusing on client factors, a recent systematic review identified a number of factors that may affect the success of coaching, including coachees' self-efficacy (i.e., their confidence in their own skills to set and achieve challenging goals), motivation for coaching (i.e., the effort in learning and the application of the newly learned), goal orientation (i.e., the belief that skills are malleable and willingness to develop them), and their trust in the (credibility of the) coach (Bozer & Jones, 2018). Yet, the authors of this review also note that the included studies have methodological limitations and that constructs have been studied in isolation rather than in interaction, raising questions about their unique exploratory contribution to coaching effectiveness (Bozer & Jones, 2018). Second, although coaching is based on the principle that client change should be largely self-directed, the coach has a crucial facilitative role in the change process. It is the safe space the coach creates, the trust the coach builds, and the methods and (conversational) techniques the coach uses that help the coachee reflect, make sense of the world, and initiate first steps to reach goals (Behrendt et al., 2021). Yet, it is still largely unclear to date which coach behaviors in particular promote positive coaching outcomes, such as self-reflection or goal attainment (Behrendt et al., 2021; Jones et al., 2016). Finally, the relationship between coach and coachee, usually referred to as the working alliance, is considered another decisive factor for coaching success (Baron & Morin, 2009; Graßmann et al., 2020). The working alliance refers to consensus regarding the goals to be achieved and the tasks that will help to reach those goals, and a bond that is characterized by trust, respect, and liking (Baron & Morin, 2009; Bordin, 1979; Graßmann et al., 2020). While the quality of the coach-coachee relationship is deemed to be critical for coaching effectiveness (for a review, see Graßmann et al., 2020), research to date lacks methodological rigor to test its relevance for real client change, and

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little is known about the factors that make a good match between coach and client (Graßmann et al., 2020; Graßmann & Schermuly, 2020).

To advance the science and practice of coaching, it is crucial to expand our understanding of the underlying mechanisms and boundary conditions that promote or impede coaching success. Only if we know 'how coaching works,' coaching interventions can be further optimized and tailored to clients' needs. In response to this gap, I formulate the final research question.

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> **Research question 4:** *What are the underlying mechanisms of coaching?*

Dissertation Overview

Physicians' health has become a major concern to healthcare systems around the world. With the demands piling up, physicians are increasingly overextended, resource-depleted, and burned out (Rotenstein et al., 2018; Shanafelt et al., 2015), which endangers not only their welfare but also that of their patients (Hodkinson et al., 2022). As a result, calls have been made for systematic change and adequate support for healthcare professionals (Montgomery, 2014; Shanafelt et al., 2020; Shanafelt, 2021). Coaching, a collaborative, systematic, and solution-oriented change intervention to support clients in achieving personally valued goals (Grant, 2003), may be part of the answer to such a call. Specifically, professional coaching may help physicians to build personal resources and strategies to protect their well-being and long-term employability. In the present dissertation, I investigate (1) risk and protective factors of physicians' well-being, (2) the effectiveness of individual coaching in improving physicians' well-being and functioning, (3) the added value of coaching compared to other types of interventions, and (4) the underlying mechanisms of coaching.

In the first empirical chapter of this dissertation (Chapter 2), I address research question 1 and investigate how physicians across different career stages can

best be supported in their work. Specifically, I investigate what type of job characteristics are associated with physicians' burnout and work engagement and if such relationships differ between physicians at different career stages (i.e., attending physicians and medical residents). Although physicians across career stages work in the same high-pressure environment and generally face similar demands in the context of patient care, residents additionally experience a heavy educational workload and are at a stage in life that is often characterized by critical life events (e.g., becoming a parent). As such, they may be particularly vulnerable to stressful job demands and may be at an increased risk of burnout (Amoafo et al., 2015; Thomas, 2004). To uncover whether physicians need extra or different support based on the demands that they face throughout the different phases of their career, I compared residents (i.e., physicians in training) and specialists regarding their job demands and resources and examined how these potential differences affected symptoms of burnout and work engagement.

To answer research question 2, in the second empirical chapter (Chapter 3), I conducted a controlled field experiment to examine the effectiveness of a professional coaching intervention provided to medical residents and specialists. Physicians followed a coaching intervention consisting of six face-to-face coaching sessions over a period of ten months. Coaching sessions were facilitated by professional coaches and were shaped based on physicians' needs. A control group did not receive any treatment. At two times (pre- and post-intervention), I assessed physicians' demands, resources, burnout symptoms, and work engagement.

Do extraordinary times call for extraordinary measures? Following the results of Chapter 3 that 'coaching works', I address research question 3 by investigating the impact of coaching in comparison to other support programs during the COVID-19 pandemic in the third empirical chapter (Chapter 4). The COVID-19 pandemic intensified the demands that physicians were facing in many ways, and healthcare organizations around the world struggled to counteract a (further) erosion of engagement and well-being. Support

programs, such as coaching, buddy systems, and e-health, were instated to provide support. In an eight-wave longitudinal study amid the COVID-19 pandemic, I assessed physicians' tendency to participate in such support programs and how these programs impacted the development of exhaustion and work engagement over time. Additionally, using a within-person design, I investigated what type of resources could buffer the effect of job demands on exhaustion in such demanding times.

The last empirical chapter (Chapter 5) focuses on the coaching process rather than its effectiveness alone and as such aims to provide an answer to research question 4. Specifically, I examined a very basic yet fundamental part of coaching: asking questions. Throughout the coaching process, the coach uses questions to open the conversation with a new client or to stimulate self-reflection around a client's problem. Hence, questions are integral to any coaching conversation. Yet, although widely used, there is a lack of understanding of the effects of these questions, and it is unclear to what extent such questions can trigger change beyond what is visible in the coaching session. Using an experimental manipulation, and two follow-up measurements, I hypothesized that solution-focused coaching questions—focusing on potential solutions rather than the origin of the problem—would be superior to problem-focused questions with regard to key outcomes of coaching. To answer this question, medical residents participated in a self-coaching exercise and reported its effects on their affect, self-efficacy, goal orientation, action planning, and goal attainment.

In the final chapter of this dissertation (Chapter 6), I discuss and integrate the findings of the four empirical chapters. Furthermore, I deliberate on the theoretical and practical implications of this dissertation for the field of healthcare and coaching. While the roots of physician burnout should also be tackled with system-level change, I discuss whether and when professional coaching can offer necessary resources and opportunities for personal growth and, hence, can protect physicians' well-being and employability. Finally, I

propose future directions for the field of healthcare and the science of coaching.[1]

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1   Please note that all empirical chapters (Chapters 2-5) were written as independent manuscripts. Therefore, the introductions of those chapters may overlap.

CHAPTER TWO

KEEP THE FIRE BURNING: A SURVEY STUDY ON THE ROLE OF PERSONAL RESOURCES FOR WORK ENGAGEMENT AND BURNOUT IN MEDICAL RESIDENTS AND SPECIALISTS IN THE NETHERLANDS

2

Abstract

Objectives

The high prevalence of burnout among medical residents and specialists raises concerns about the stressful demands in healthcare. This study investigated which job demands and job and personal resources are associated with work engagement and burnout and whether the effects of these demands and resources differ for medical residents and specialists.

Method

In a survey study among 124 residents and 69 specialists, we assessed job demands, job resources, personal resources, work engagement, and burnout symptoms using validated questionnaires. Results were analyzed using multivariate generalized linear model, ordinary least squares regression analyses, and path analyses. Five academic and general hospitals in the Netherlands took part in this study. Participants were residents and specialists working in the fields of pediatrics, internal medicine, and neurology.

Results

The associations of job and personal resources with burnout and work engagement differed for residents and specialists. Psychological capital was associated with burnout only for specialists (b = -.58, p < .001), whereas psychological flexibility was associated with burnout only for residents (b = -.31, p < .001). Colleague support (b = .49, p < .001) and self-compassion (b = -.33, p = .004) were associated with work engagement only for specialists.

Conclusions

This study suggests that particularly personal resources safeguard the work engagement and lessen the risk of burnout among residents and specialists. Both residents and specialists benefit from psychological capital to maintain optimal functioning. In addition, residents benefit from psychological flexibility while specialists benefit from colleague support. Personal resources seem important protective factors for physicians' work engagement and well-being.

When promoting physician well-being, a one-size-fits-all approach might not be effective but, instead, interventions should be tailored to the specific needs of specialists and residents.

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Healthcare professionals are well-known for their high work engagement, that is, their absorption by their work and dedication to patient care (Schaufeli et al., 2002; Scheepers et al., 2017). Unfortunately, such vigor and dedication can also have a flipside. Healthcare professionals work in a very complex system with long and irregular working hours and need to deal with various high job demands such as time pressure, emotionally taxing patient interactions, work-family conflict, and job insecurity. These high job demands cause alarming high rates of burnout symptoms such as emotional exhaustion and cynicism in healthcare compared to other professions (Dyrbye et al., 2013; Firth-Cozens, 2003; Maslach & Jackson, 1981; Thomas, 2004; Shanafelt et al., 2014). Among physicians, medical residents seem to be especially at risk for burnout, with burnout symptoms often being reported by one out of four residents (Prins et al., 2007; Rimmers, 2018; Shanafelt et al., 2002; Thomas, 2004). This is hardly surprising: In addition to the job demands that all physicians face, residents also face high educational demands, need to get used to clinical rotations and shifts, experience high responsibility yet limited autonomy, and experience high uncertainty about their future career (Campbell et al., 2010; Dyrbye et al., 2013). Additionally, residency marks a period that is characterized by stressful and demanding life events such as marriage and getting children.

Obviously, burnout has a strong negative impact on healthcare professionals and their employers. Most important, burnout symptoms are associated with decreased quality of care through delayed decision making, unprofessional work behaviors (i.e., conflict), and suboptimal patient care (i.e., not adequately discussing treatment options with patients or making medical errors; Dyrbye et al., 2013; Prins et al., 2007, Shanafelt et al., 2002). Also, burnout is accompanied by long-term sickness leave and early retirement (Dyrbye et al., 2013). It is the highly critical work environment of healthcare professionals and the high-stake consequences of their functioning that call for a deeper understanding of the demands and resources that relate to the work engagement and well-being (i.e., a lack of burnout) of these professionals. Similarly, it is important to understand which factors can help physicians to

stay motivated in spite of the demands they face. An important result of motivation is work engagement, a positive work-related state of mind characterized by vigor, dedication, and absorption (Demerouti et al., 2001; Schaufeli et al., 2002). Work engagement has been linked to employee performance across professions (Christian et al., 2011; Salanova et al., 2005), including healthcare (Loerbroks et al., 2017). Healthcare professionals who are engaged are also less likely to commit medical errors (Prins et al., 2009). Consequently, both (a lack of) burnout and work engagement are important components for the optimal functioning of healthcare professionals.

Earlier research conceptualized burnout and work engagement as opposite poles of a continuum that are mutually exclusive (Maslach & Leiter, 1997). Recent research has evidenced that burnout and work engagement are (negatively) related, yet different constructs (i.e., low burnout does not necessarily imply high engagement; Schaufeli & Bakker, 2004). Furthermore, these studies have shown that job characteristics that are associated with the prevalence of burnout are different from those that are associated with work engagement. Surprisingly, few of these studies were carried out in healthcare settings. Yet, knowledge of the job characteristics that relate to burnout and work engagement among healthcare professionals is essential to develop tailored interventions (e.g., training, coaching) that support these professionals in their optimal functioning (Carrieri et al., 2018).

Theoretical Framework: The Job Demands–Resources Model

The Job Demands-Resources (JD-R) model proposes that work engagement and well-being are promoted when (healthcare) professionals have job resources that help them to cope with high job demands and that bolster their motivation (Demerouti et al., 2001). Generally, the JD-R model differentiates between two universal types of characteristics that people find in their jobs: that is, job demands on the one hand and job resources on the other hand.

Job demands refer to "those physical, social, or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs" (Demerouti et al., 2001, p. 501). Examples of job demands are workload, time pressure, and emotional demands (Demerouti et al., 2001). High job demands require professionals to spend sustained effort in order to meet perceived demands, which gradually drains resources and ultimately leads to depletion and exhaustion (Bakker & Demerouti, 2007). That being said, job demands are considered the prime factor leading to burnout (Demerouti et al., 2001). Fortunately, professionals also have job resources that support them in coping with job demands. Such job resources, i.e., "physical, psychological, social, or organizational aspects of the job that are either/or (…) functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, [or] stimulate personal growth, learning, and development" (Bakker & Demerouti, 2007, p. 312) can comprise both situational/external and personal/internal resources (Richter & Hacker, 1998; Xanthopoulou et al., 2009a). Situational resources are, for example, colleague and supervisory support, and the amount of autonomy professionals have in their work (Bakker et al., 2005; Schaufeli & Bakker, 2004). However, resources are not exclusively found in the environment, but people can also create them for themselves (Hobfoll, 1989). Personal resources refer to individual psychological states such as an individual's psychological capital (including self-efficacy, hope, optimism, and resilience), self-compassion (treating oneself with kindness when things go wrong), and psychological flexibility (the ability to choose behaviors that are in line with one's goals and values) that mirror people's perception to control and impact successfully upon the environment (Hobfoll et al., 2003; Xanthopoulou et al., 2007). Apart from supporting employees in coping with job demands, situational and personal resources are also important in their own right as they are considered the prime factor leading to work engagement (Hakanen et al., 2006). Meta-analytic studies have shown, for example, that colleague and supervisory support and optimism and self-efficacy were positively related to work engagement (Christian et al., 2011; Halbesleben, 2010).

The current study builds on the JD-R model that considers burnout and work engagement as independent, yet correlated constructs and job demands and (situational and personal) resources as the main predictors of burnout and work engagement, respectively. Although the relationships between demands and resources as antecedents and burnout and work engagement as outcomes are confirmed in numerous studies, research also shows that the strength of these relationships varies. This variation is likely due to the different professional samples and work contexts that were studied (Crawford et al., 2010; Murray et al., 2017; Van den Heuvel et al., 2010). While residents and specialists work in the same occupational setting, they may face different job characteristics and, hence, different job demands and resources. As such, it is particularly relevant to examine whether the job demands, resources and outcomes, and the relationships among these variables, differ between residents and specialists. Insight into this topic can inform stakeholders how to regulate workplace practices in order to foster physician well-being and work engagement. Importantly, such information can ensure the effectiveness of interventions because it allows us to tailor interventions to a specific situation or group and tap into personal and situational characteristics that can be changed at the individual and the group level, respectively. In the current study, we, therefore, investigate how job demands (workload, job insecurity, work-family conflict), situational resources (autonomy, supervisor support, colleague support), and personal resources (psychological capital, self-compassion, psychological flexibility) relate to work engagement and burnout among specialists and residents.

Method

Study Population

From January to December 2017, we collected data from attending (specialists) and resident physicians at four academic hospitals and one general hospital in the Netherlands. The physicians were specialized or trained in pediatrics,

internal medicine, or neurology. Because this study is part of a larger program offering individual coaching to physicians, the sample consists of physicians that signed up for the coaching program or control participants. The choice of departments and hospitals that were invited for participation in this study was based on internal logistics. That is, because the coaching program was only offered to physicians and residents from the pediatrics department, a relatively high number of participants in this sample are pediatricians. A comparison of the gender demographics of this sample with the broader population indicates that the sample of residents is representative of the hospital population. However, female specialists are overrepresented in our sample. Limitations of generalizability will be discussed.

Procedure

All physicians were invited by email to complete an online survey. Participation was voluntary; participants provided informed consent for participation in the study. We took measures to safeguard the anonymity and confidentiality of all participants.

Measures

To capture the different components of the JD-R model, we included job demands, job resources, personal resources, burnout, and work engagement in the survey, as well as demographics.

Job Demands
Job demands were assessed with three scales: workload, job insecurity, and work-family conflict.

Workload was assessed with four items from the Quantitative Workload Inventory (Spector & Jex, 1998) and two additional items (α = .85). An example

item measuring quantitative workload is: "How often does your job require you to work fast?" The two additional items were "How often does your job require you to work overtime?" and "How often do you experience emotional strain from your job?" The items were scored on a 5-point scale ranging from 1 (*never*) to 5 (*always*). Higher scores indicate higher frequency, i.e., higher workload.

Job insecurity, that is, "the perceived threat of job loss and the worries related to that threat" (De Witte, 2005, p. 1) was measured with an adapted version of the Job Insecurity Scale (De Witte, 2000). The scale consisted of five items (α = .83), including "Chances are, that in the future I won't be able to find the job that I want" or "I am feeling insecure about the future of my career." The items were scored on a 7-point scale ranging from 1 (*not at all applicable*) to 7 (*very applicable*). Higher scores indicate stronger applicability, i.e., higher job insecurity.

Work-family conflict was measured with four items of the Work-Family Conflict Scale (α = .87), measuring the extent to which "the general demands of, time devoted to, and strain created by the work interfere with performing family-related responsibilities" (Netemeyer et al., 1996, p. 401). An example item is: "The demands of my work interfere with my home and family life." The items were scored on a 7-point scale ranging from 1 (*not at all applicable*) to 7 (*very applicable*). Higher scores indicate stronger agreement with the proposition, i.e., higher work-family conflict.

Job Resources
Job resources encompassed autonomy, supervisor support, and colleague support.

Autonomy was measured with nine items from the Work Design Questionnaire (Morgeson & Humphrey, 2005; (α = .93) assessing perceived autonomy with regard to work scheduling and methods and decision-making. Example items include "The job allows me to plan how I do my work", "The job provides me

with significant autonomy in making decisions", and "The job allows me to make decisions about what methods I use to complete my work", respectively. The items were scored on a 7-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*). Higher scores indicate stronger agreement with the proposition, i.e., higher autonomy.

Supervisor support, that is, the experienced psychological and work support from the supervisor, was assessed with six items from Vinokur, Schul, and Caplan (1987; α = .95). Example items include "My supervisor provides me with encouragement" or "My supervisor says things that raise my self-confidence." For residents, supervisory support measured the support received from the training supervisor, whereas, for specialists, supervisory support measured the support received from the head of the department. The items were scored on a 7-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*). Higher scores indicate stronger agreement with the proposition, i.e., higher supervisor support.

Colleague support, the experienced psychological and work support from colleagues, was assessed with the same six items as supervisor support (α = .94), but the items referred to colleagues instead of the supervisor. Also, here, higher scores indicate stronger agreement with the proposition, i.e., higher colleague support.

Personal Resources
We included three personal resources: psychological capital, self-compassion, and psychological flexibility.

Psychological capital was measured with 12 items reflecting hope, optimism, resilience, and self-efficacy from the validated Dutch version of the Psychological Capital Questionnaire (Luthans et al., 2007; Ouweneel et al., 2012; α = .88). The items include "Right now I see myself as being pretty successful at work" (hope), "I always look on the bright side of things regarding my job" (optimism), "When I have a setback at work, I have trouble recovering

from it, moving on" (resilience; R), and "When encountering difficult problems in my work, I know how to solve them" (self-efficacy). The items were scored on a 7-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*). Higher scores indicate stronger agreement with the proposition, i.e., higher psychological capital.

Self-compassion, entailing "treating oneself with kindness, recognizing one's shared humanity, and being mindful when considering negative aspects of oneself" (Neff & Vonk, 2009, p. 23) was measured with six items from the Self-Compassion Scale (Neff & Vonk, 2009; α = .72). Example items are: "When I am going through a very hard time, I give myself the caring and tenderness I need" (self-kindness), "I try to see my failings as part of the human condition" (common humanity), and "When something painful happens I try to take a balanced view of the situation" (mindfulness). The items were scored on a 5-point scale ranging from 1 (*rarely*) to 5 (*almost always*). Higher scores indicate higher frequency, i.e., higher self-compassion.

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Psychological flexibility, that is, the ability to flexibly take appropriate action towards achieving goals and values, even in the presence of challenging or unwanted events (Hayes et al., 2006) was measured with seven items of the Work Acceptance and Action Questionnaire (Bond et al., 2013; α = .81). Example items include "I am able to work effectively in spite of any personal worries that I have" and "I can work effectively, even when I doubt myself." The items were scored on a 5-point scale ranging from 1 (*rarely*) to 5 (*almost always*). Higher scores indicate higher frequency, i.e., higher psychological flexibility.

Outcomes
The outcome variables included in this study were burnout symptoms and work engagement.

Burnout was measured with the Dutch version of the Maslach Burnout Inventory – General Survey[2] (Schaufeli et al., 1996; Schaufeli & Van Dierendonck, 2000). *Exhaustion* was measured with five items (α = .84). An example item is: "Working all day is really a strain for me." The items were scored on a 7-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*). *Cynicism* was measured with four items (α = .77). An example item is: "I noticed that I have got too much distance from my work." The items were scored on a 7-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*). Higher scores indicate stronger agreement with the proposition, i.e., higher exhaustion and cynicism, respectively.

Work engagement, including vigor, dedication, and absorption at work, was measured with nine items from the Utrecht Work Engagement Scale (Schaufeli et al., 2002; α = .90). Example items include: "When I get up in the morning, I feel like going to work" (vigor), "I am enthusiastic about my job" (dedication), and "When I am working I forget everything around me" (absorption). The items were scored on a 7-point scale ranging from 1 (*never*) to 7 (*always*). Higher scores indicate higher frequency, i.e., higher work engagement.

Statistical Analysis

Factor Structure
To examine whether the items loaded on their respective scales, we performed separate confirmatory factor analyses (CFAs) for the scales representing job demands, job resources, and personal resources, respectively. As each of these predictors consists of three scales, we compared a three-factor model to a one-factor model. We report the factor loadings and the commonly used model fit criteria, that is, the chi-square goodness-of-fit value, the chi-square divided by the degrees of freedom (CMIN/DF), the comparative fit index (CFI),

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2   The instrument consists of three subscales measuring exhaustion, cynicism, and professional efficacy. Because exhaustion and cynicism constitute the essence of the burnout syndrome (Schaufeli & Buunk, 2003), we only measured these two components.

the root mean square error of approximation (RMSEA) and the standardized root mean squared residual (SRMR).

Between-Group Variance

Because participants (n = 192) can be considered as nested within (four) academic hospitals and (three) specializations, we first assessed between-group variance within our data. A multilevel mixed-method analysis estimating a random intercept model was conducted to calculate between level-2 variance.[3]

Control Variables

We explored the association between potential control variables (i.e., age, gender, having children, job tenure, signed up for coaching) and the dependent variables by means of regression analyses for residents and specialists separately.

2

Path Analysis

The relationships between the independent (job demands, job resources, and personal resources) and dependent variables (exhaustion, cynicism, and work engagement), were examined with path analysis using IBM SPSS AMOS 25 (IBM SPSS, Chicago). In a first step, we modeled a latent variable termed burnout based on the observed variables exhaustion and cynicism. Modeling these two outcome variables on one latent variable was justified both theoretically (Maslach et al., 2001; Schaufeli & Buunk, 2003) and statistically (correlation of r = .58, p <.01 between exhaustion and cynicism).

A path model with independent variables and work engagement and burnout as dependent variables was tested using a covariance matrix as input and maximum likelihood estimation. This analysis adequately captures the nature of the associations between the independent and dependent variables and was therefore chosen over regular OLS regression analyses. Furthermore, this analysis allowed for a multigroup comparison, testing possible differences in

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3   The final Hessian matrix was not positive definite as the intercept variance was zero.

model estimates between residents and specialists. Again, we report the commonly used model fit criteria as described earlier.

Patient and Public Involvement

This study investigated factors associated with work engagement and burnout in medical specialists and residents. No patients or public representatives were involved in the study.

Results

In total, we invited a number of 247 physicians to take part in this survey of whom 75 physicians had signed up for a personal coaching program that would start in a few months. A total number of N = 193 physicians were included in this study after application of inclusion criteria[4] (response rate = 78%). The study population included 151 women (78.2%) and 42 men (21.8 %). The mean age was 36.5 years (SD = 8.5). One hundred and twenty-four residents (64.2%) and 69 medical specialists (35.8%) participated. Participants were working in the field of pediatrics (n = 142; 73.6%), neurology (n = 14; 7.3 %), and internal medicine (n = 37; 19.2%). See Table 1 for a description of participants' characteristics. Internal consistency (Cronbach's alpha) was acceptable for all scales (see Table 2).

Factor Structure

All items loaded on their respective scales. Factor loadings were on average .73, .81, and .60 for job demands, job resources, and personal resources, with three items loading below .40 and a minimal loading of .28. These items were

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4   Inclusion criteria: minimal response time >15 minutes, survey was filled out no later than one week after the first coaching session; survey progress ≥ 80 percent

included because the scales were validated test instruments with overall high internal consistencies. The modification indices provided by the CFAs indicated that some items shared error variance. In order to improve the model fit, we allowed covariation of error variance between these items. Covariation was only allowed for items originating from the same scale. All three models provided adequate fit to the data with $X^2(86) = 153.74$, $p < .001$, $X^2/df = 1.79$, CFI = .95, RMSEA = .06, SRMR = .06; $X^2(180) = 312.75$, $p < .001$, $X^2/df = 1.74$, CFI = .97, RMSEA = .06, SRMR = .06, and $X^2(262) = 435.96$, $p < .001$, $X^2/df = 1.66$, CFI = .90, RMSEA = .06, SRMR = .07 for the three-factor models representing job demands, job resources, and personal resources, respectively. Our results showed that the hypothesized three-factor model of these predictors provided a better fit to the data than a common factor model (e.g., fit indices of the common factor model of job demands: $X^2(89) = 864.96$, $p < .001$, $X^2/df = 9.72$, CFI = .46, RMSEA = .21, SRMR = .19). The differences in the chi-square goodness-of-fit value between the three-factor and the common factor models were significant, all ps < .001. These results allow us to conclude that the factor structure assumed in our path model is appropriate.

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Table 1

Demographics of Residents and Specialists Participating in a Study on the Role of Personal Resources for Work Engagement and Burnout, 2017

Characteristics	Residents	Specialists
	No. (% of 124)	No. (% of 69)
Gender		
Female	101 (81.5%)	50 (72.5%)
Male	23 (18.5%)	19 (27.5)
Age [a]		
20 - 30 years	42 (33.9%)	1 (1.4%)
31 - 40 years	81 (65.3%)	28 (40.6%)
41 - 50 years	1 (0.8%)	22 (31.9%)
51 - 60 years	-	15 (21.7%)
61 years and older	-	3 (4.3%)
Specialty		
Pediatrics	87 (70.2%)	55 (79.7%)
Internal medicine	27 (21.8%)	10 (14.5%)
Neurology	10 (8.1%)	4 (5.8%)
Signed up for coaching [b]		
Yes	53 (42.7%)	36 (52.2%)
No	71 (57.3%)	33 (47.8%)
Home situation		
Children, one or more	51 (41.1%)	48 (69.6%)
No children	73 (58.9%)	21 (30.4%)

Note. This study was conducted at four academic and two general hospitals in The Netherlands. In this study, the authors investigated associations between job demands (workload, work-family conflict, job insecurity), job resources (autonomy, supervisor support, colleague support), personal resources (psychological capita, self-compassion, psychological flexibility) with work engagement and burnout. [a] The residents taking part in this study were on average 31.9 years old, (standard deviation [SD] = 3.0); the specialists were on average 44.9 years old (SD = 8.7). [b] Participants were registered to participate in an institutional coaching program or private coaching.

Between-Group Variance

A multivariate generalized linear model analysis confirmed that hospitals and specializations did not significantly differ on exhaustion, cynicism, and work engagement. Therefore, it was not necessary to account for group-level effects when estimating the relationships between the independent and dependent variables.

Control Variables

The results showed that only the control variables job tenure; b = .23, p = .02 (related to exhaustion for residents), b = .24, p = .02 (related to cynicism for residents) and signed up for coaching;[5] b = -.31, p = .01 (related to exhaustion for specialists) were related to exhaustion, cynicism, or engagement. Therefore, and to save power, we only included job tenure and signed up for coaching as control variables in the further analyses.

Descriptives and Group Differences

Table 3 describes means, standard deviations, and differences in study variables for residents and specialists, respectively. Independent sample t-tests were performed to investigate mean-level differences in study variables comparing residents and specialists. Compared to specialists, residents reported significantly lower workload (M = 3.29, SD = .68 vs. M = 3.52 SD = .83, p[6] < .05), lower autonomy (M = 4.10, SD = .99 vs. M = 5.19, SD = 1.02, p < .01), and lower work engagement (M = 4.93, SD = .77 vs. M = 5.21 SD = .88, p < .05). However, residents reported significantly higher job insecurity than specialists (M = 4.26, SD = 1.17 vs. M = 3.03, SD = 1.27, p < .01).

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5   Response options were: 1 = yes, 2 = no
6   Significance values were p = .039 when equal variances were assumed, and p = .052 when equal variances were not assumed.

2

Table 2

Correlations between the Study Variables for Residents and Specialists and Internal Consistencies of Study Variables in a Study on the Role of Personal Resources for Work Engagement and Burnout, 2017

Study Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Signed up for coaching [a]	-	.11	.31*	-.27*	-.40**	.18	.02	.32**	.28*	.23	.16	-.26*	-.11	.05
2. Job tenure	.13	-	.02	-.22	-.10	.14	-.05	.11	.19	.21†	.00	.12	.10	.02
3. Workload	-.09	.08	**0.85**	.18	.46**	-.14	-.00	-.16	-.14	-.16	.06	.33**	.27*	.02
4. Job insecurity	-.16†	.18*	.23*	**0.83**	.10	-.29*	-.27*	-.21†	-.53**	-.42**	-.29*	.29*	.38**	-.41**
5. Work-family conflict	-.13	.11	.36**	.15	**0.87**	-.32**	-.16	-.10	-.25*	-.36**	.01	.42**	.27**	-.07
6. Autonomy	.13	.13	-.29**	-.18*	-.11	**0.93**	.21	.29*	.55**	.37**	.18	-.35**	-.28*	.38**
7. Colleague support	.08	-.03	-.19*	-.24**	-.06	.18*	**0.94**	.08	.43**	.47**	.16	-.47**	-.58**	.60**
8. Supervisor support	-.07	-.17	.01	-.07	.14	.20*	.08	**0.95**	.41**	.25*	.31**	-.15	-.16	.25*
9. PsyCap	.13	-.13	-.22*	-.38**	-.21*	.33**	.26**	.19*	**0.88**	.68**	.37**	-.50**	-.60**	.58**
10. Self-compassion	.13	-.13	-.32**	-.41**	-.33**	.15	.22*	.09	.51*	**0.72**	.25*	-.33**	-.50**	.32**
11. Psych. flexibility	.06	.03	-.01	-.13	-.02	.30**	.26**	.05	.37*	.13	**0.81**	.10	-.17	.32**
12. Exhaustion	-.05	.15†	.35**	.22*	.51**	-.04	-.23*	-.07	-.32*	-.45**	-.26**	**0.84**	.67**	-.50**
13. Cynicism	.14	.26**	.23**	.23*	.23*	-.21*	-.33**	-.17	-.42**	-.26**	-.37**	.58**	**0.77**	-.67**
14. Work engagement	-.05	-.04	-.12	-.15	-.14	.31**	.24**	.20*	.54**	.29**	.38**	-.40**	-.62**	**0.90**

Note. The values below the diagonal refer to residents. The values above the diagonal refer to specialists. Internal consistencies (Cronbach alpha) are displayed on the diagonal in bold numbers. [a] Participation (yes) was indicated with the number 1, participation (no) was indicated with the number 2.
† p < .10. * p < .05. ** p < .01.

Table 3

Means and Standard Deviations (SD) of Study Variables for Residents and Specialists in a Study on the Role of Personal Resources for Work Engagement and Burnout, 2017

Study Variables	Residents [a]	Specialists [b]
	Mean (*SD*)	Mean (*SD*)
Work demands		
Workload* [c]	3.29 (.68)	3.52 (.83)
Job insecurity**	4.26 (1.17)	3.03 (1.27)
Work-family conflict	4.47 (1.14)	4.56 (1.32)
Job resources		
Autonomy**	4.10 (.99)	5.19 (1.02)
Colleague support	5.37 (.85)	5.38 (1.17)
Supervisor support	4.66 (1.39)	4.84 (1.49)
Personal resources		
PsyCap[†]	4.91 (.72)	5.11 (.75)
Self-compassion[†]	3.19 (.63)	3.36 (.65)
Psych. flexibility	3.53 (.61)	3.62 (.62)
Outcomes		
Exhaustion	2.55 (1.02)	2.40 (1.18)
Cynicism	2.24 (.99)	2.01 (1.07)
Work engagement*	4.93 (.77)	5.21 (.88)

Note. PsyCap indicates psychological capital; psych. flexibility indicates psychological flexibility. [a] A total number of 124 residents participated. [b] A total number of 69 specialists participated. [c] Significance values were p = .039 with equal variances assumed, and p = .052 with equal variances not assumed. Differences in means between residents and specialists are indicated as following: [†]p <.10. *p < .05. **p <.01.

Path Analyses

Preliminary Analyses

As suggested by Jöreskog and Sörbom (1993), we first specified an initial model based on our research question, and then adjusted the model according to the modification indices it produced, allowing covariation between all predictor variables, as well as covariation between job tenure and autonomy. Because both indicators of burnout highly correlated with engagement, we allowed covariation of error variance between exhaustion and cynicism with engagement. Testing the initial path model for specialists and residents separately revealed that the control variable signed up for coaching was not

related to any of the two outcomes in both subsamples. We, therefore, removed this variable from the analysis and continued the analysis with only job tenure as control variable.

Model Fit

The path analysis showed a satisfactory fit to the data, $X^2(51) = 109.25$, $p < .001$, $X^2/df = 2.14$, CFI = .96, RMSEA = .06, SRMR = .06. In order to improve the model fit, we removed the paths that were non-significant for both residents and specialists (Kline, 2011). We removed the paths from job insecurity and supervisor support to burnout. Further, we removed the paths from workload, job insecurity, work-family conflict, autonomy, supervisor support, and job tenure to work engagement as they were not significant, partly despite significant zero-order correlations between these variables (see Table 2). The model resulted in an improved fit of $X^2(75) = 132.33$, $p < .001$, $X^2/df = 1.76$, CFI = .96, RMSEA = .05, SRMR = .06. The tested model is presented in Figure 1. The model explained 53.9% of the variance in burnout and 27.9% of the variance in work engagement.

Relationships With Burnout

The standardized path coefficients with burnout as outcome are presented in Figure 1.

Job Demands. Separate tests for residents and specialists suggested that there were no differences between both groups: Workload was positively related to burnout for residents ($b = .20$, $p = .011$) and specialists ($b = .22$, $p = .009$). A multigroup comparison test confirmed that these relationships did not significantly differ, $p > .05$. Furthermore, separate tests for both groups suggested that work-family conflict as a job demand differed between residents and specialists: It was positively related to burnout for residents ($b = .33$, $p < .001$) but not for specialists ($p > .05$). However, these relationships did not significantly differ in a multigroup comparison test, $p > .05$.

Job Resources. Separate tests for both groups suggested that there were differences between residents and specialists regarding autonomy: Autonomy was positively related to burnout for residents (b = .19, p = .016), but not for specialists (p > .05). However, these differences did not significantly differ in a multigroup comparison test, p > .05. Furthermore, separate tests for both groups suggested that colleague support differed between residents and specialists: It was not related to burnout for residents (p > .05) but was negatively related to burnout for specialists (b = -.41, p < .001). However, these relationships did not significantly differ in a multigroup comparison test, p = .088.

Personal Resources. Separate tests for both groups suggested that there were differences between residents and specialists regarding the personal resource psychological capital: Psychological capital was not related to burnout for residents (p > .05) but was negatively related to burnout for specialists (b = -.58, p < .001). A multigroup comparison test confirmed that these relationships significantly differed, p = .003. Furthermore, separate tests for both groups suggested that self-compassion differed between residents and specialists: Self-compassion was negatively related to burnout for residents (b = -.22, p = .017) but not related to burnout for specialists, p > .05. However, these relationships did not significantly differ in a multigroup comparison test, p = .072. Also, separate tests suggested that there were differences between residents and specialists regarding the personal resource psychological flexibility: It was related to burnout for residents (b = -.31, p < .001), but not related to burnout for specialists (p > .05). A multigroup comparison test confirmed that these relationships did significantly differ, p = .003.

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Relationships With Work Engagement

The standardized path coefficients with work engagement as outcome are presented in Figure 1.

Job Resources. Separate tests suggested that there were differences regarding colleague support between residents and specialists: Colleague support was not related to work engagement for residents ($p > .05$) but was positively related to work engagement for specialists ($b = .49$, $p < .001$). A multigroup comparison test confirmed that these relationships did significantly differ, $p = .001$.

Personal Resources. Separate tests for both groups suggested that there were no differences between residents and specialists regarding psychological capital: Psychological capital was positively related to work engagement for both residents ($b = .37$, $p < .001$) and specialists ($b = .55$, $p < .001$). A multigroup comparison test confirmed that these relationships did not significantly differ, $p > .05$. Furthermore, separate tests for both groups suggested that there were differences between residents and specialists regarding self-compassion: Self-compassion was not related to work engagement for residents ($p > .05$) but was negatively related to work engagement for specialists ($b = -.33$, $p = .004$). A multigroup comparison test confirmed that these relationships did significantly differ, $p = .003$. Also, separate tests for both groups suggested that there were differences between residents and specialists regarding psychological flexibility: Psychological flexibility was positively related to work engagement for residents ($b = .17$, $p = .035$), but not for specialists ($p > .05$). However, a multigroup comparison test showed that these relationships did not significantly differ, $p = .778$.

Figure 1

Tested Path Model of Exhaustion, Cynicism, and Work Engagement
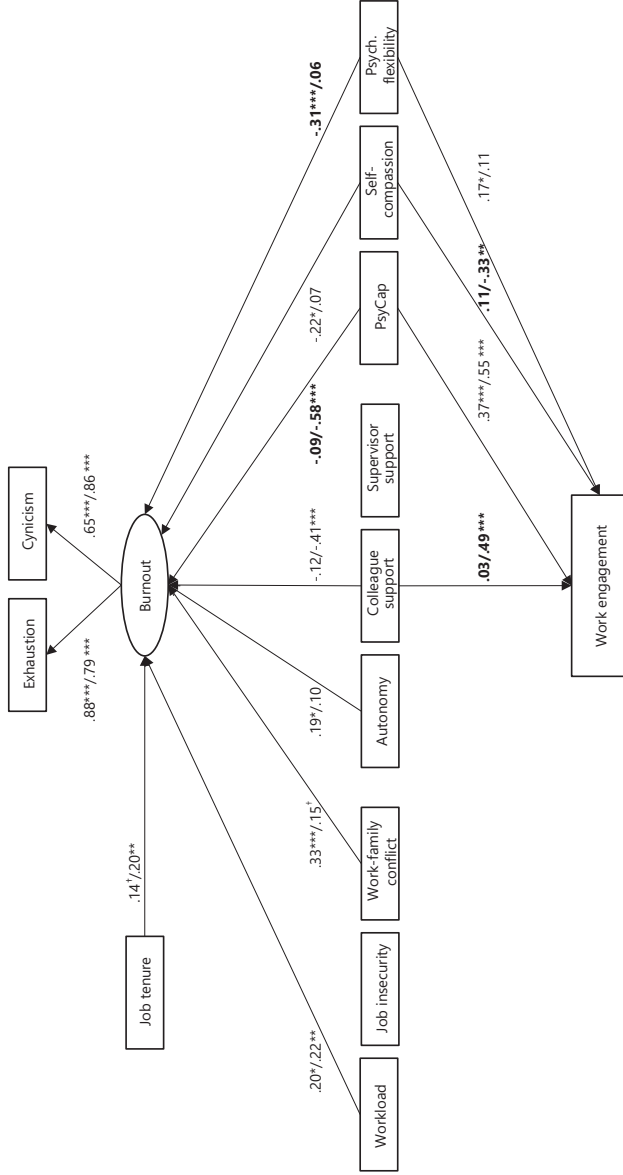
Note. Burnout as latent variable is based on the observed variables exhaustion and cynicism. The authors allowed covariation between all predictor variables, as well as between job tenure and autonomy. They also allowed covariation of error variance between exhaustion and cynicism with work engagement. For ease of reading, covariation is not depicted in the model. Only significant paths are displayed; the paths from job insecurity and supervisor support to burnout were not significant. Also, the paths from work-family conflict, autonomy, supervisor support, job insecurity, and workload to work engagement were not significant. Standardized parameter estimates refer to residents (first) and specialists (second). Bold parameter estimates depict significant differences in model estimates between residents and specialists.

PsyCap indicates psychological capital; psych. flexibility indicates psychological flexibility; the direction of the paths is indicated by an arrow symbol.

$^{†}p < .10.$ $^{*}p < .05.$ $^{**}p < .01.$ $^{***}p < .001.$

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Discussion

Main Findings

The goal of this study was to gain insight into the prevailing demands and resources that contribute to burnout and work engagement in medical residents and specialists. This study revealed that residents and specialists face different demands in their work that cannot be measured by the same yardstick but instead require tailored solutions. Confirming prior studies on the stressful demands during residency (Dyrbye et al., 2013), our data showed that residents as compared to specialists experienced less autonomy and felt more uncertain about the future of their job. Furthermore, symptoms of exhaustion and cynicism among residents increased with tenure, which may at least partly relate to growing feelings of job insecurity (see Table 2). Contrary to what has been reported in previous studies (Dyrbye et al., 2014), residents did not report significantly higher exhaustion and cynicism than specialists but, on average, felt less engaged with their work.

We suggest that specialists and residents resort to different resources to cope with their job demands. Although both groups have the same level of resources at their disposal, only certain resources contribute to the well-being of specialists and residents, respectively. While specialists benefit from psychological capital and colleague support, residents benefit especially from psychological flexibility and self-compassion. It is likely that residents and specialists—as a function of their role and the career phase they are in—use those resources that bring the greatest benefit when facing job demands at work. This will be discussed subsequently. In addition, psychological capital was found to play a role for the work engagement of both specialists and residents, which corroborates earlier findings among other professional groups (Xanthopoulou et al., 2008).

Physicians are exposed to high job demands, both during attendance and residency, which could harm their well-being (Demerouti et al., 2001). However,

our study suggests that job demands other than workload (e.g., job insecurity, work-family conflict) and a lack of resources (e.g., self-compassion, psychological capital, and psychological flexibility) play a prominent role in the onset of burnout. The fact that the residents in this study reported a relatively lower workload than specialists, yet reported similar symptoms of burnout, underlines this notion. Generally, our findings suggest that for preventing burnout it is important to focus on those demands and resources that are most relevant for specific groups of physicians (e.g., specialists or residents). Specialists may particularly benefit from interventions that raise their psychological capital and—at the team level—foster team cohesion and support whereas residents may benefit relatively more from interventions that increase their self-compassion and flexibility.

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Resources That Buffer Burnout Among Specialists and Residents

Personal Resources

Consistent with prior research (Avey et al., 2011; Lyubomirsky et al., 2005), psychological capital played an eminent role for the well-being of specialists. Psychological capital may reduce the risk of burnout in two ways. First, it can counteract the distress associated with a demanding workplace by regulating negative emotions (Avey et al., 2009). Second, individuals with high psychological capital tend to perceive job demands as challenges rather than hindrances. That is, they associate job demands with personal gain or growth, evoking positive emotions, instead of fear and threat, evoking negative emotions (LePine et al., 2005; Tims et al., 2013). Given the buffering capacity of psychological capital (Avey et al., 2011; Lyubomirsky et al., 2005), it is surprising that we did not find the same result among residents. Instead, we found that flexibility and self-compassion rather than psychological capital contributed to the well-being of residents.

The importance of flexibility and self-compassion among residents may be due to their specific career phase, which is characterized by insecurity, constant feedback, and criticism. That is, residency is an extremely challenging period, in which residents have to deal with their newly gained responsibilities (i.e., managing uncertainty, breaking bad news) while also processing new information and continuously adapting to new organizational structures and teams. Residents have to shift regularly between their roles as trainee and doctor (Schaufeli et al., 2009), experience high challenges at work, and are confronted with their relative lack of knowledge and skills when entering residency. More so, residents are taught from medical school on to be critical towards themselves, a necessity that is demanded in a high-stakes work environment where carelessness can have radical consequences. Consequently, medical professionals likely adopt a rather self-critical attitude (Conrad, 1988). One way to deal with these stressful work events is to accept one's inexperience, forgive one's deficiencies (i.e., self-compassion) and remain effective despite self-doubt and worries (i.e., psychological flexibility). More specifically, residents need to internalize that despite the current healthcare culture, not-knowing, insecurities, and mistakes are part of the journey and not a sign of weakness or failure. In addition, psychological flexibility may allow residents to shift between tasks and professional roles, as it facilitates adapting to fluctuating situational demands, shifting perspective, and reconfiguring mental resources (Kashdan & Rottenberg, 2010). Thus, being kind towards oneself and viewing one's own shortcomings as human can help to safeguard residents against the stressors uniquely present in residency.

Colleague Support

In addition to psychological capital, colleague support also seems to promote the well-being of specialists. Numerous studies have indeed shown that social support is associated with both psychological and physical health outcomes (Cohen, 2004; Berkman et al., 2000) as it ameliorates the impact of stress and strain on health (Bakker et al., 2005; Berkman et al., 2000; Van der Doef & Maes, 1999). First, social support may involve emotional support, the feeling that one is loved and cared for (Schaefer et al., 1981). Second, it may involve

the provision and sharing of information (Schaefer et al., 1981). Specialists work in relatively permanent teams with interdependent work relationships. Knowing their colleagues and their expertise well, they can ask for and receive emotional but also informational support. Colleagues can provide intimacy or reassurance during emotional and stressful events, and they can assist in times of uncertainty and difficult medical inquiries that require another expert opinion.

Although our data do not allow any insights into the quality of support received from colleagues, it is possible that the quality of support is different for residents and specialists. Because of the nature of residency (e.g., competition and regular rotations) it is likely that colleague relationships are relatively less permanent and fruitful for residents. Although valuing their opinion, residents might not be convinced that they can ultimately lean on a fellow resident's opinion in solving medical problems. This could explain why residents benefit relatively less from colleague support than specialists.

Resources That Foster Work Engagement Among Specialists and Residents

Personal Resources

Our finding that psychological capital is a personal resource that is vital for the work engagement of both residents and specialists corroborates with prior studies among other professional groups (Avey et al., 2009; Tims et al., 2013). Unexpectedly, self-compassion was negatively rather than positively associated with the work engagement of specialists, while we found no such effect for residents. It is possible that high levels of self-compassion represent a self-protective bias, which serves to deny responsibility for failure (Zuckerman, 1979). That is, high self-compassion may lean towards attributing failure to external factors (e.g., situational constraints, lack of help from others) allowing specialists to maintain positive perceptions of their capabilities. Over a longer period of time, this way of thinking about their own shortcomings may hamper

specialists' personal development and work efforts, which may ultimately cause a reduction in work engagement. It is therefore worth exploring whether the benefits of self-compassion depend on time, or whether there is an optimal level—or perhaps a tipping point—at which self-compassion contributes to one's well-being.

Colleague Support

Colleague support not only buffered the occurrence of burnout but also fostered work engagement among specialists rather than residents. As argued above, specialists as opposed to residents work in more permanent teams. It has been consistently found that the social support in these teams facilitates the work engagement of team members (Schaufeli et al., 2008).

Study Strengths and Limitations

The participation of both residents and specialists from different specialties and the high response rate (78%) allowed for a realistic display of the demands and resources that physicians encounter during different stages of their career. Our research shows how different demands and resources relate to burnout and work engagement among specific groups of physicians, and, as such, advances our understanding of how to intervene when well-being or work engagement are at risk. This is an important first step in the prevention of burnout and the conservation of work engagement among healthcare professionals. Yet, our results also indicate that burnout and work engagement are highly interweaved, just as in numerous prior studies (Høigaard et al., 2012; Schaufeli et al., 2008). Consequently, it is important to consider both burnout and work engagement when addressing job functioning as a whole.

Finally, our study has some limitations. First, although theory and research point to causal relationships between demands and burnout and resources and work engagement (Demerouti et al., 2001; Montgomery et al., 2006), our design does not allow to draw causal conclusions. It is possible that the

proposed relationships in the JD-R model are reversed. For instance, feelings of exhaustion and cynicism may change the way employees perceive their work demands, intensifying the feeling that demands are piling up (Leiter & Durup, 1996). Future research could use multi-wave designs that can provide insight into the development of study variables over time and the causal dynamics in this process (De Lange, 2005). Second, all data have been gathered using self-report questionnaires. This might lead to a so-called 'common-method bias' (Podsakoff et al., 2003). A potential way to reduce this bias would be to expand the sources of information (e.g., supervisors' assessments of employee burnout and engagement) and the methods of data collection (i.e., triangulation of data), for instance by including qualitative data as a next step. We are aware that self-ratings and observer ratings of work characteristics and job demands may not necessarily correlate high (Demerouti et al., 2001). However, we believe that expanding the information source through third-party observations as well as triangulation can help to provide a richer picture of the work characteristics being studied. Another limitation of this study is the relatively small sample size, especially in the group of specialists. To examine if power was sufficient in both samples of residents and specialists, we conducted post-hoc power analyses[7] on several unsupported direct effects (e.g., paths self-compassion and psychological flexibility to burnout for specialists, path psychological capital to burnout for residents). In all cases, the statistical power was 1.0, indicating that non-significant findings are most likely truly non-significant, i.e., that this study had enough power for the conducted analyses. Furthermore, this study is limited by its sample composition, which predominantly consists of female pediatricians or pediatric residents. While the gender demographics of our sample closely matched the broader hospital population for residents, this was not the case for specialists as female specialists were overrepresented in our sample. While this is likely due to the intervention context of this study, future studies should include a larger sample with different specialties and ensure a more equal gender distribution to test if these effects are stable

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7   Soper DS. (2019). Post-hoc Statistical Power Calculator for Multiple Regression [Software]. Available from http://www.danielsoper.com/statcalc

across specialties and gender. However, with ample evidence supporting the JD-R model's presumptions in different professional contexts and in various samples, it is not likely that the results of this study are greatly biased by its sample characteristics. Finally, the concept of colleague support is limited in the sense that it does not allow for a differentiation between support functions. Ideally, a concept of social support including such a differentiation (Schaefer et al., 1981) could help to disentangle *how* perceived social support helps specialists to counteract stress and exhaustion and promote work engagement.

Implications

To our knowledge, this is the first study that attempts to reveal the specific demands and resources that may impact burnout and work engagement among residents and specialists. Understanding how demands and resources are linked to physician well-being and engagement is a fundamental premise for designing successful interventions to minimize the risk of burnout. Our results suggest that a one-size-fits-all approach might not be effective for promoting physician well-being but, instead, that interventions should be tailored to the specific needs of specialists and residents (Scheepers et al., 2017). This is in line with a recent call to consider contextual complexities such as specialty or career stage when setting up interventions to promote physician well-being (Carrieri et al., 2018). While interventions for specialists should focus on increasing psychological capital and colleague support, interventions for residents should, in addition to increasing psychological capital, be aimed at increasing, self-compassion and psychological flexibility. Interestingly, especially personal resources seemed to preserve physician well-being and engagement. Therefore, targeting personal resources rather than structural constraints seems promising to counter the demands physicians face. Additionally, interventions could also target training institutions and hospitals with the aim of building a culture that facilitates self-compassion, psychological capital, and psychological flexibility among their residents and specialists. We

consider testing the effectiveness of interventions aiming at fostering personal resources an important future inquiry.

Conclusion

With physician well-being being central to optimal patient care, it is important to uncover work characteristics that influence work engagement and burnout. This study revealed that physicians are not a uniform body, but that medical residents and specialists face different challenges in their work that require unique resources to resort to. While all physicians are likely to benefit from resources facilitating goal attainment (i.e., psychological capital), medical residents may additionally benefit from self-care and flexibility, and specialists may additionally benefit from social support. Finally, by respecting also the unique needs of residents and specialists, one can create equal opportunities for all physicians in the challenging workplace that healthcare is.

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CHAPTER THREE

TURNING THE TIDE: A QUASI-EXPERIMENTAL STUDY ON A COACHING INTERVENTION TO REDUCE BURN-OUT SYMPTOMS AND FOSTER PERSONAL RESOURCES AMONG MEDICAL RESIDENTS AND SPECIALISTS IN THE NETHERLANDS

Abstract

Objectives

Physician burnout is increasing, starting already among residents. The consequences of burnout are not limited to physicians' well-being, they also pose a threat to patient care and safety. This study investigated the effectiveness of a professional coaching intervention to reduce burnout symptoms and foster personal resources in residents and specialists.

Method

In a controlled field experiment, 57 medical residents and specialists received six coaching sessions, while a control group of 57 physicians did not undergo any treatment. Coaching was provided by professional coaches during a period of approximately 10 months aiming at personal development and growth. The authors assessed burnout symptoms of exhaustion and cynicism, the personal resources psychological capital, psychological flexibility, and self-compassion, as well as job demands and job resources with validated questionnaires. The authors conducted repeated measures analyses of variance (ANOVA) procedures to examine changes over time for the intervention and the control group. Four academic hospitals in the Netherlands participated in this study.

Results

The coaching group (response rate 68%, 57 physicians, 47 women) reported a reduction in burnout symptoms and an increase in personal resources after the coaching intervention, while no such changes occurred in the control group (response rate 35%, 42 women), as indicated by significant Time x Group interactions, all $ps < .01$. Specifically, physicians increased their psychological capital ($\eta_p^2 = .139$), their self-compassion ($\eta_p^2 = .083$), and reported significantly less exhaustion ($\eta_p^2 = .126$), the main component of the burnout syndrome.

Conclusions

This study suggests that individual coaching is a promising route to reduce burnout symptoms in both residents and specialists. Moreover, it strengthens personal resources that play a crucial role in the prevention of burnout.

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Physicians experience a variety of stressors, including time pressure, emotionally taxing patient interactions, and an increasing bureaucratic burden. Not surprisingly, burnout (i.e., feeling exhausted, dissociated, and less efficient) is high among senior healthcare professionals as well as residents (Thomas, 2004; Shanafelt et al., 2014). Burnout has severe consequences for physicians, often leading to long-term absenteeism and eventually abandonment of the medical profession (Shanafelt et al., 2003). But the negative consequences are not limited to physicians' well-being and careers: With burnout flooding the healthcare system, patient safety is also at risk. Physician burnout is associated with poorer quality of care and reduced patient safety (Hall et al., 2016; Salyers et al., 2017).

In order to reduce the risk of physician burnout and thus warrant adequate patient care and patient safety, powerful interventions are needed that prioritize physicians' needs. This is the case in professional coaching, which is commonly defined as "a (…) result-oriented and systematic process in which the coach facilitates the enhancement of life experience and goal-attainment in the personal and/or professional life of normal, non-clinical clients" (Grant, 2003, p. 254). This definition of coaching acts on the assumption that coaching is a facilitative process aimed at self-directed change of the client (Theeboom et al., 2017). Additionally, this definition distinguishes coaching from other helping relationships such as mentoring and counseling (Theeboom et al., 2016). Mentoring generally refers to a relationship between a more senior employee and a protégé aimed at offering guidance and feedback in a specific organizational context (Noe, 1988). In coaching, a coach usually does not hold a formal position within the client's organization. Additionally, our definition of coaching emphasizes a non-clinical target group, which makes it clearly distinguishable from counseling and therapy.

Surprisingly, coaching is not common in medical practice, and research is scarce (Dyrbye et al., 2019; Firth-Cozens, 2001, 2003; Lovell, 2018; Manek, 2004) despite the fact that the positive effects of coaching on well-being and functioning have been demonstrated in a number of educational and

professional settings (Theeboom et al., 2014). Furthermore, with coaching being generally connected to problem elimination (e.g., burnout) in healthcare, rather than to professional development and well-being, its power is underrated if not invisible due to stigma. Given the potential benefits of coaching for physician well-being, research on the effectiveness of coaching in a professional development setting is sorely needed.

A professional coaching intervention may simultaneously help to resolve and prevent burnout among physicians. That is, professional coaching can not only directly reduce burnout symptoms but can also strengthen personal resources that may prevent such burnout symptoms in the first place (Biswas-Diener, 2009). This assumption is rooted in research on burnout, which shows that the onset of burnout is caused by both heavy job demands and a lack of (personal) resources (Demerouti et al., 2001). Personal resources refer to "aspects of the self that are generally linked to resiliency (...) [and refer to] individuals' sense of their ability to control and impact upon their environment successfully" (Hobfoll et al., 2003, p. 632). According to the Job Demands-Resources Model (JD-R; Demerouti et al., 2001), a common work-stress model in the prediction of burnout and work engagement, personal resources help people to deal with extreme demands, ultimately buffering the negative effects of job demands on burnout (Xanthopoulou et al., 2007). At the same time, personal resources stimulate motivation and work engagement. With both work engagement and well-being (i.e., a lack of burnout) being indispensable for optimal physician functioning, the value of professional coaching lies in its ability to kill two birds with one stone: It aims to reduce burnout symptoms as well as stimulate lifelong reflection and self-management through recognizing and strengthening individuals' personal resources.

In this two-wave quasi-experimental study, we evaluated the benefits of an individual coaching program for the resources, demands, and well-being (i.e., lack of burnout symptoms), and work engagement of medical residents and specialists in the Netherlands.

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Method

Study Setting and Population

This study evaluates the effectiveness of an individual coaching program in two major academic hospitals, the Erasmus Medical Center (EMC) and the Leiden University Medical Center (LUMC) in the Netherlands. Using a quasi-experimental pretest and posttest control design, this study comprises the comparison of a treatment group (i.e., coaching group) with a control group that did not receive any treatment on two measurement occasions (i.e., at pretest and posttest). In a quasi-experimental design like this, the assignment to conditions (i.e., coaching vs. no coaching) is non-random (Cook & Campbell, 1979). A final number of 114 physicians participated in this study, of which 57 received individual coaching between January 2017 and August 2018. The coaching program was completely voluntary, offering six individual coaching sessions to both residents and specialists from the pediatrics department at the EMC and LUMC. Because funding for the coaching program was initially only available for the pediatrics department, physicians from other departments (i.e., internal medicine, neurology) and pediatric residents from two other hospitals (i.e., VU University Medical Center [VUmc] and Academic Medical Center [AMC]) served as a control group. Additionally, pediatricians who did not voice interest in the coaching program were placed in the control group as well. See Table 1 for sample characteristics.

Intervention and Procedure

Physicians were informed through different channels (i.e., e-mail newsletter, information presentation, mouth-to-mouth) about the coaching program and could sign themselves up for the program via e-mail. Physicians that voiced interest in the coaching program were asked to participate in the study and were able to choose a coach of their preference. All coaches participating in the program were selected based on a number of relevant criteria, such as

years of experience and affinity and experience with the medical profession. Specifically, all coaches were selected based on their senior level of coaching experience, their experience with physician-clients, positive references from previous physician clients, and accredited coaching training. The selection committee consisted of a coaching professional, a senior human resources manager, and the medical specialist and initiator of the coaching program. Physicians could view introductory video clips of coaches on the program website. In these 1-minute-long videos, coaches introduced themselves and provided information about their way of working with clients. Thereafter, physicians chose their coach, and the first coaching session was arranged.

Table 1
Characteristics of the Study Population in a Study on Coaching Effectiveness for Medical Residents and Specialists, 2017-2018

Characteristics	Intervention (N = 57)	Control (N = 57)
Male sex – no. (%)	10 (17.5)	15 (26.3)
Age - yr		
Median	33	35
Interquartile range	9.5	12
Specialty – no (%)		
Pediatrics	57 (100)	32 (56.1)
Internal medicine	-	15 (26.3)
Neurology	-	10 (17.5)
Professional role – no (%)		
Resident	33 (57.9)	36 (63.2)
Specialist	24 (42.1)	21 (36.8)
Hospital – no (%)		
EMC	32 (56.1)	33 (57.9)
LUMC	25 (43.9)	9 (15.8)
VUmc	-	7 (12.3)
AMC	-	8 (14.0)
Coaching experience – no. (%)	22 (38.6)	19 (33.3)
Home situation – no (%)		
Children, one or more	28 (49.1)	29 (50.9)
No children	29 (50.9)	28 (49.1)

Note. This study was conducted at four academic hospitals in the Netherlands.

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The Coaching Process

Coaches and participants received ample freedom to shape the coaching program according to coaches' professional methods and participants' needs. Because an important premise of successful coaching is that the coach and the client agree on the goals to achieve, as well as the means to achieve them (Bordin, 1979; McKenna & Davis, 2009), we largely avoided regulations to the coaching process (such as the topics of the coaching, the coaching method or the speed of the trajectories) that might have stood in the way of such consensus. Constraints were set only with regard to the overall outline of the coaching program. That is, coaching was set to a maximum of six (1 or 1.5 hour long) sessions, and coaches and participants were encouraged to complete the coaching trajectories within a period of approximately 10 months but could stretch their trajectories if necessary (M = 7.98, SD = 2.81), which only few participants did. All participants started their coaching trajectory individually, depending on the availability of their coach. Time in between coaching sessions was determined by the participants—and hence varied—and was further not registered. All coaching sessions took place face-to-face and outside of work at the coach's workspace. Informed consent was obtained from all participants in both the coaching and the control group at the beginning of the study. Participants who did not give consent were excluded from the study. Demographics, as well as the study variables, were measured with an online survey delivered via Qualtrics (Qualtrics, 2005) shortly before the first coaching session at baseline (T1) and minimal seven days (M = 87.25, SD = 92.95, range: 7-364) after the last coaching session was finished (T2). Participants that failed to fill out the T1 or T2 survey at first, received up to three reminders by e-mail with the request to complete the survey. For a description of exclusion criteria, see Figure 1.

Study Variables

In line with the JD-R model, we measured job demands (workload, job insecurity, work-family conflict), job resources (autonomy, colleague support,

supervisor support), personal resources (psychological capital, self-compassion, psychological flexibility), as well as burnout symptoms and work engagement.

Job Demands
We measured workload, job insecurity, and work-family conflict.

Workload was assessed with four items from the Quantitative Workload Inventory (Spector & Jex, 1998) and two additional items that were added to match the specific demands of medical practice. The two additional items assessed working overtime and emotional strain. All items were measured on a 5-point scale ranging from 1 (*never*) to 5 (*always*).

Job insecurity, that is, "the perceived threat of job loss and the worries related to that threat", was assessed with a 5-item adapted version of the Job Insecurity Scale (De Witte, 2000, p. 1). The items were scored on a 7-point scale ranging from 1 (*not at all applicable*) to 7 (*very applicable*).

Work-family conflict was measured with four items of the Work-Family Conflict Scale assessing "the general demands of, time devoted to, and strain created by the work interfere with performing family-related responsibilities" (Netemeyer et al., 1996, p. 401). The items were scored on a 7-point scale ranging from 1 (*not at all applicable*) to 7 (*very applicable*).

Job Resources
Job resources encompassed autonomy, supervisor support, and colleague support.

Autonomy was measured with nine items from the Work Design Questionnaire assessing perceived autonomy with regard to work scheduling and methods and decision making (Morgeson & Humphrey, 2006). The items were scored on a 7-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*).

Supervisor support, that is, the experienced psychological and work support from the supervisor, was assessed with six items from Vinokur, Schul, and Caplan (1987). For residents, supervisory support measured the support received from the training supervisor, whereas, for specialists, supervisory support measured the support received from the head of the department. The items were scored on a 7-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*).

Colleague support, the experienced psychological and work support from colleagues, was assessed with the same six items as supervisor support (Vinokur et al., 1987), but the items referred to colleagues instead of the supervisor.

Personal Resources
We measured psychological capital, self-compassion, and psychological flexibility.

To capture *psychological capital's* components, hope, optimism, and resilience, we used nine items from the Dutch version of the PsyCap questionnaire (Luthans et al., 2007). To measure the fourth component, self-efficacy, we used three items based on the Generalized Self-efficacy Scale (Schwarzer & Jerusalem, 1995) that were adapted so they would fit the occupational setting as used in previous research (Vink et al., 2011). The items were scored on a 7-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*).

Self-compassion, that is "treating oneself with kindness, recognizing one's shared humanity, and being mindful when considering negative aspects of oneself" was measured with six items from the Self-Compassion Scale (Neff & Vonk, 2009, p. 23). This scale encompasses three subscales: self-kindness, common humanity, and mindfulness. The items were scored on a 5-point scale ranging from 1 (*rarely*) to 5 (*almost always*).

Psychological flexibility, that is, the ability to flexibly take appropriate action towards achieving goals and values, even in the presence of challenging or unwanted events was measured with seven items of the Work Acceptance and Action Questionnaire (Bond et al., 2013). The items were scored on a 5-point scale ranging from 1 (*rarely*) to 5 (*almost always*).

Burnout Symptoms and Work Engagement

We measured *burnout symptoms* with the two core scales exhaustion and cynicism of the Dutch version of the Maslach Burnout Inventory (Schaufeli et al., 1996; Schaufeli & Van Dierendonck, 2000). Both scales were measured with five and four items, respectively. The items were scored on a 7-point scale ranging from 1 (*totally disagree)* to 7 (*totally agree*).

We measured *work engagement* with the Utrecht Work Engagement Scale (Schaufeli et al., 2002). Its nine items cover the three subscales vigor, dedication, and absorption. The items were scored on a 7-point scale ranging from 1 (*never*) to 7 (*always*).

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Statistical Analyses

Intervention Effects

To test if the coaching intervention would have beneficial effects, repeated measures analyses of variance (ANOVA) procedures were performed to examine changes over time for the intervention and the control group. The outcomes analyzed were job demands (workload, job insecurity, work-family conflict), job resources (autonomy, colleague support, supervisor support), personal resources (psychological capital self-compassion, psychological flexibility), as well as burnout symptoms (exhaustion, cynicism), and work engagement. We controlled for coaching attitude, i.e., the degree to which one believes coaching is beneficial or helpful, which was measured at baseline, because it can be expected that a positive attitude may contribute to the

success of the intervention. Significant Time x Group interactions of the outcome variables were followed up with post-hoc tests.

Preliminary Analyses

Self-Selection of Participants. Because participation in the coaching program was voluntary—and complete randomization of participants to conditions was not possible due to internal (i.e., financial and time) restrictions and prior agreements within the hospital organizations—we examined structural demographic differences prior to the intervention between the coaching and the control group (T1). These demographics were gender, age, tenure (i.e., medical resident, specialist), department (i.e., pediatrics, internal medicine, neurology), and hospital affiliation (i.e., EMC, LUMC, VUmc, AMC). Sample characteristics are displayed in Table 1. While both groups did not differ with respect to gender ($x^2(1)$ = 1.28, p = .26), age (F (1,112) = 0.49, p = .49), and tenure ($x^2(1)$ = 0.33, p = .57), they did differ in department affiliation ($x^2(2)$ = 32.02, p < .001) and hospital affiliation ($x^2(3)$ = 22.55, p < .001). More specifically, all coaching participants were affiliated with the pediatrics department of two of the four participating hospitals. We conducted three types of additional analyses to rule out that potential effects attributed to the coaching intervention were caused by factors related to the imbalance of department and hospital affiliation—although conceptually, this is highly unlikely.

Hospital Affiliation. To estimate a potential impact of hospital affiliation on treatment effectiveness, we conducted multiple univariate repeated measures for each of the outcome variables including hospital affiliation as additional control variable to see if the previous results would hold. Additionally, we conducted the original analyses solely for physicians employed at the two medical hospitals that were represented in the intervention group.

Department Affiliation. Given that all participants in the coaching intervention were affiliated with the pediatrics department we analyzed whether pediatricians differed from physicians affiliated with other departments (e.g., neurology, internal medicine) with respect to contextual variables, here

competition, and *psychological safety,* variables that reflect experienced department work climate and potentially could influence treatment effectiveness.

Baseline Differences Between Groups. With respect to the outcome variables at baseline, we found significant differences between the intervention and the control group: The intervention group scored significantly lower on personal resources and significantly higher on job demands and exhaustion, similar to the results of a previous study on counseling in Norwegian doctors (Rø et al., 2008). An overview of the differences between the groups is displayed in Table 2. Because distribution of participants was not random, and because there were significant differences in a number of outcomes prior to the intervention, we tested our hypotheses with repeated measures analysis of variance. These analyses are favored over the analysis of covariance in a non-randomized intervention study (Van Breukelen, 2006). Additionally, we followed the recommendations of Huberty and Moris (1989) and conducted multiple ANOVAs as opposed to a multivariate ANOVA as a preliminary step to multiple ANOVAs.

3

Patient and Public Involvement

This study investigated the effectiveness of a professional coaching intervention in medical residents and specialists. No patients or public representatives were involved in the study.

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Table 2

Means and Standard Deviations (SD) of Study Variables for the Intervention and the Control Group at Baseline (T1) in a Study on Coaching Effectiveness for Medical Residents and Specialists, 2017-2018

Study Variables	Intervention (N = 57)	Control (N = 57)
	Mean (*SD*)	Mean (*SD*)
Job demands		
Workload**	3.48 (.67)	3.10 (.78)
Job insecurity**	4.24 (1.33)	3.37 (1.45)
Work-family conflict**	4.85 (1.05)	4.00 (1.19)
Job resources		
Autonomy	4.39 (1.03)	4.67 (1.14)
Colleague support	5.33 (.96)	5.47 (.90)
Supervisor support	4.63 (1.51)	4.98 (1.42)
Personal resources		
PsyCap**	4.83 (.69)	5.19 (.72)
Self-compassion**	3.07 (.60)	3.39 (.66)
Psych. flexibility*	3.43 (.63)	3.67 (.53)
Outcomes		
Exhaustion**	2.75 (1.08)	2.13 (.92)
Cynicism	2.11 (1.08)	2.06 (.93)
Work engagement	5.08 (.78)	5.04 (.75)

Note. SD indicates standard deviation; PsyCap indicates psychological capital; psych. flexibility indicates psychological flexibility.
Differences in means between the intervention and the control group are indicated by the following significance values: *p < .05; **p < .01.

Results

A total number of 84 physicians signed up for the coaching program while 161 physicians signed up for the control group. Of these two groups, 57 physicians in each group completed the follow-up measurement and were included in the final sample (Figure 1). Table 1 shows the demographic characteristics of the study population. Internal consistencies measured at baseline ranged from .72 to .95 and were acceptable for all scales. See Table 3 for correlations between the study variables at baseline.

Intervention Effects

The analyses revealed significant changes in the intervention group that did not occur in the control group, as indicated by significant Group x Time interactions for a number of outcomes. A summary of the results is shown in Table 4. With regard to job demands, post-hoc analyses revealed a decrease in job insecurity and work-family conflict in the intervention group with both ps < .05. With regard to job resources, post-hoc analyses showed that autonomy increased in the intervention group, while supervisor support decreased in the control group, all ps < .05. With regard to personal resources, post-hoc comparisons indicated an increase in psychological capital and self-compassion in the intervention group, all ps < .05, as well as a decrease in self-compassion in the control group, p < .05.   No changes occurred in psychological flexibility, in either the control or coaching group, all ps >.05. Finally, with regard to outcomes, analyses showed that the coaching group significantly decreased their burnout symptoms but showed no changes in work engagement. Post-hoc comparisons indicated a decrease in exhaustion in the intervention group, p < .05, while no such changes occurred in the control group, all ps > .05 or with regard to cynicism, p > .05. For a graphical representation of these effects, see Figure 2.

3

Figure 1
Flow Chart of Study Inclusion for Participants in Coaching and Control Group in a Study on Coaching Effectiveness for Medical Residents and Specialists
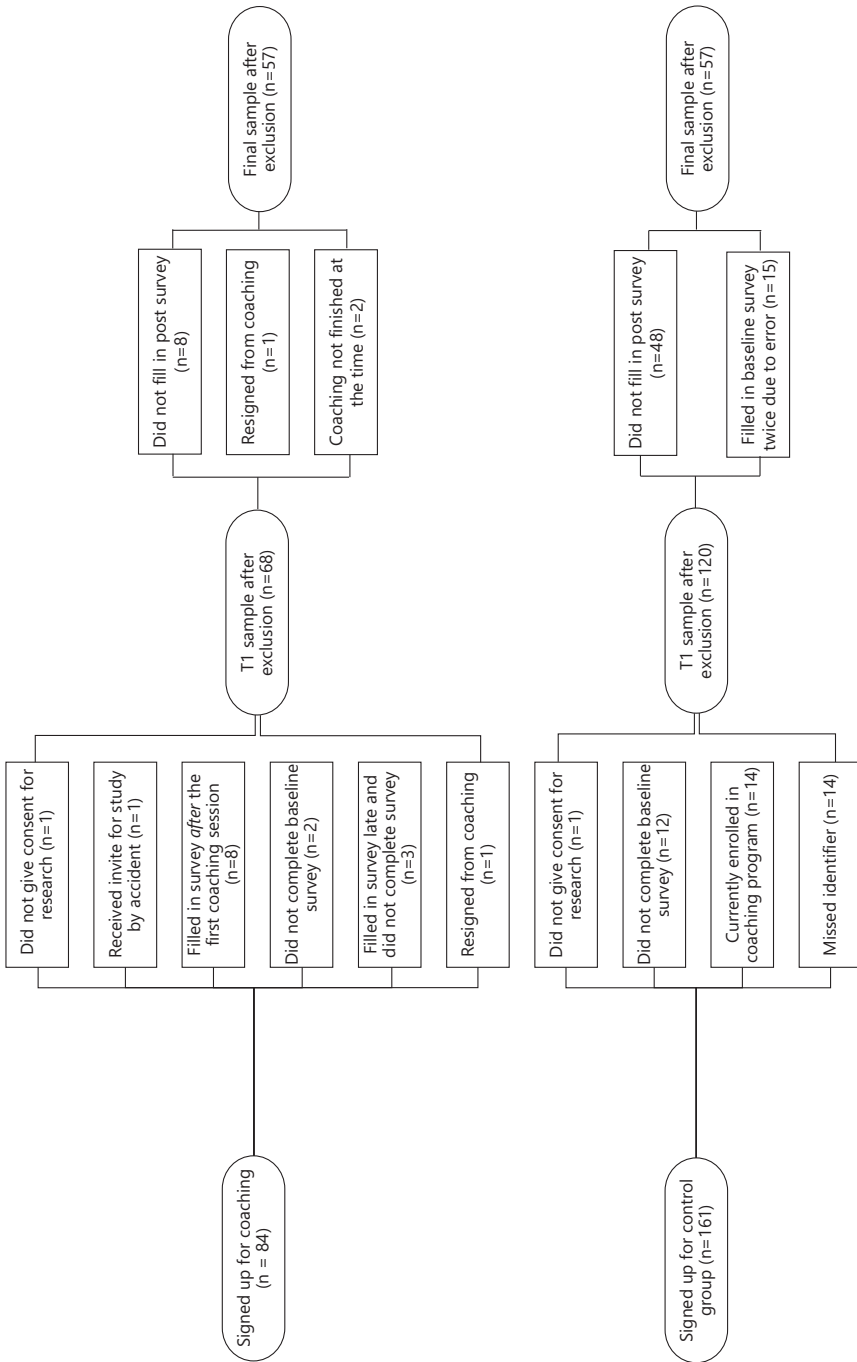
Figure 2

Graphic Representation of the Outcomes at Baseline and Follow-up Measurement for the Coaching Group and the Control Group in a Study on Coaching Effectiveness for Medical Residents and Specialists

a) Job insecurity

b) Work-family conflict

c) Autonomy

d) Psychological capital

e) Self-compassion

f) Exhaustion

3
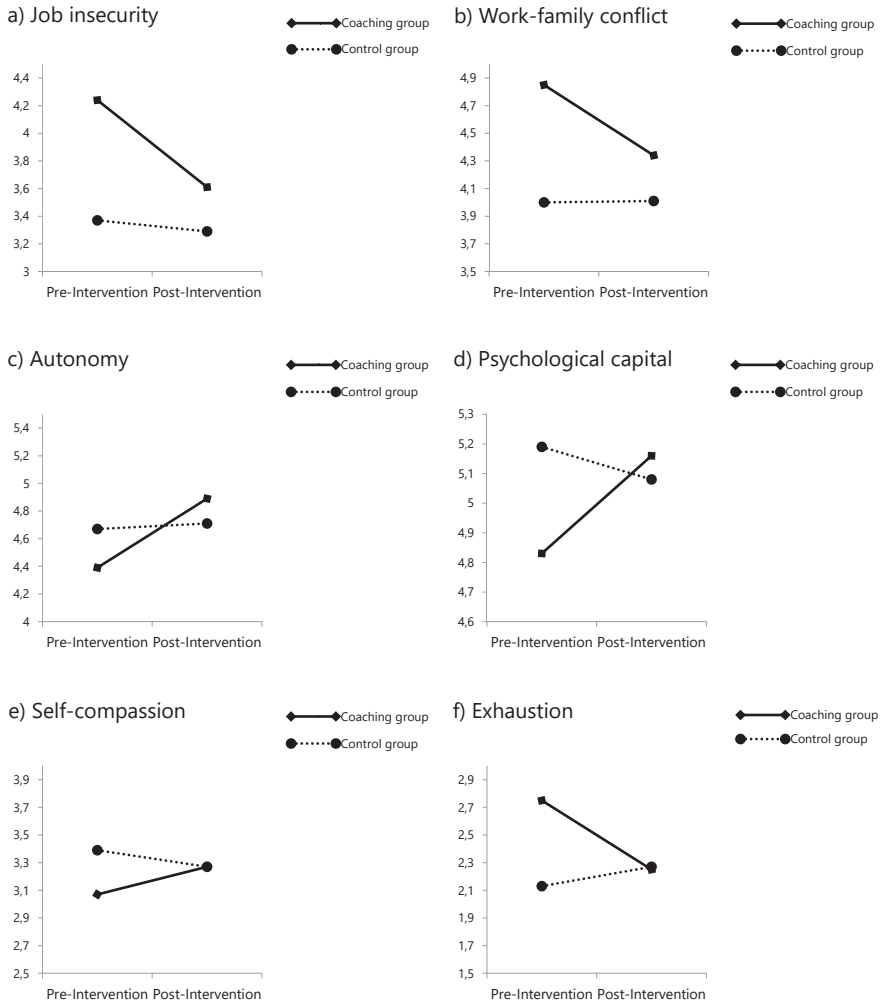
Table 3

Correlations Between the Study Variables for the Intervention and Control Group at Baseline (T1) in a Study on Coaching Effectiveness for Medical Residents and Specialists, 2017–2018

Study Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Coaching attitude	1	.284*	-.032	.015	-.024	-.088	-.094	-.218	-.203	.172	-.014	.006	.092
2. Workload	-.050	1	-.089	.322*	.015	-.124	-.209	-.017	-.067	.120	.299*	.168	-.066
3. Job insecurity	.128	.191	1	-.071	-.458**	-.278*	.095	-.511**	-.405**	-.220	.225	.221	-.285*
4. Work-family conflict	-.142	.454**	-.071	1	.038	-.045	.131	.060	-.107	-.004	.341**	.207	-.100
5. Autonomy	-.025	-.333*	-.335*	-.232	1	.161	-.036	.382**	.224	.142	-.177	-.141	.290*
6. Colleague support	.234	-.163	-.153	-.040	.348**	1	-.100	.418**	.348**	.137	-.463**	-.510**	.557**
7. Supervisor support	-.026	.020	-.379**	-.035	.341**	.233	1	.154	-.031	-.076	.140	-.032	.027
8. PsyCap	-.173	-.370**	-.463**	-.199	.486**	.325*	.401**	1	.607**	.242	-.365**	-.576**	.627**
9. Self-compassion	-.176	-.276*	-.422**	-.260	.244	.362**	.427**	.512**	1	.086	-.545**	-.397**	.388**
10. Psych. flexibility	-.238	.031	-.170	.189	.415**	.256	.212	.273*	.209	1	-.094	-.187	.407**
11. Exhaustion	.064	.493**	.313*	.411**	-.299*	-.222	-.318*	-.363**	-.439**	-.157	1	.602**	-.570**
12. Cynicism	-.111	.355**	.356**	.005	-.339**	-.328*	-.373**	-.473**	-.286*	-.337*	.686**	1	-.617**
13. Work engagement	.228	-.164	-.228	-.041	.309*	.349**	.491**	.451**	.303*	.403**	-.482**	-.712**	1

Note. Above the diagonal: coaching group; below the diagonal: control group

PsyCap indicates psychological capital; psych. flexibility indicates psychological flexibility; *p* < .05. **p* < .01.

Table 4

Summary of Results for Repeated Measures Analyses and Pre- and Postintervention Means for the Intervention Group in a Study on Coaching Effectiveness for Medical Residents and Specialists, 2017–2018

Time x Group interaction for study variables	Mean Square	F	p	η_p^2	Preintervention Mean (SD)	Postintervention Mean (SD)	Df	t	p
Job demands									
Workload	0.21	0.84	.362	.007	3.48 (.67)	3.31 (.61)	56	1.97	.053
Job insecurity**	6.07	10.99	.001	.090	4.24 (1.33)	3.61 (1.46)	56	4.10	.000
Work- family-conflict**	4.60	8.33	.005	.070	4.85 (1.05)	4.34 (1.12)	56	4.36	.000
Job resources									
Autonomy**	3.41	7.56	.007	.064	4.39 (1.03)	4.89 (1.06)	56	-4.19	.000
Colleague support*	1.68	4.68	.033	.040	5.33 (.96)	5.56 (.79)	56	-1.94	.057
Supervisor support*	3.79	5.60	.020	.048	4.63 (1.51)	4.82 (1.35)	56	-1.28	.207
Personal resources									
PsyCap**	2.57	17.92	.000	.139	4.83 (.69)	5.16 (.65)	56	-4.08	.000
Self-compassion**	1.26	10.00	.002	.083	3.07 (.60)	3.27 (.52)	56	-2.72	.009
Psych. flexibility	0.34	1.80	.182	.016	3.43 (.63)	3.47 (.65)	56	-0.53	.600
Outcomes									
Exhaustion**	6.20	15.94	.000	.126	2.75 (1.08)	2.25 (.79)	56	4.00	.000
Cynicism*	2.53	5.44	.022	.047	2.11 (1.08)	1.90 (.75)	56	1.46	.151
Work engagement†	0.69	3.19	.077	.028	5.08 (.78)	5.28 (.59)	56	-2.19	.033

Note. η_p^2 refers to the degree to which variability among observations can be attributed to conditions controlling for the subjects' effect that is unaccounted for by the model.

Df for the Time x Group interaction = 1 for all study variables and 111 for the error (time)

†$p < .10.$ *$p < .05.$ **$p < .01.$

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Supplementary Analyses

In order to rule out that effects attributed to the intervention were (partly) influenced by hospital and department affiliation we conducted three additional analyses.[8]

Hospital Affiliation

First, we conducted repeated measures analyses for each outcome variable with the whole sample, but this time added hospital affiliation as a control variable. The results of these analyses revealed no significant differences with those of the original analyses, except for work engagement as outcome. Here, we find (instead of a marginal significant) a significant Group x Time interaction, p = .026. Post-hoc analyses indicated that the coaching group reported increased work engagement after the coaching program, with no changes occurring in the control group. Overall, these results indicate that hospital affiliation did not influence treatment effectiveness in significant ways. Additionally, we examined whether the results of the whole sample (including four hospitals) were comparable to those of a subsample including only physicians from the two academic hospitals that offered the coaching intervention (i.e., EMC and LUMC). We conducted repeated measures analyses for each outcome variable. Coaching attitude, i.e., the degree to which one believes coaching is beneficial or helpful, was included in the analyses as control variable. The results of the analyses with the subsample showed some small differences with those of the analyses with the whole sample. Here we find slightly stronger effects for supervisor support (i.e., decrease in control group), cynicism (i.e., significant increase in control group while only marginally significant result in original analyses), and work engagement (i.e., increase in coaching group), all in the same direction of the results including the complete sample as shown by post-hoc comparisons.

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8   Tables summarizing the results can be requested from the first author.

Department Affiliation

We compared physicians affiliated with the pediatrics department with physicians affiliated with other departments on contextual variables that could potentially influence treatment effectiveness, that is, experienced competition and psychological safety. Experienced competition referred to the amount of competition experienced between co-workers and was measured with five items from Van Vianen (2000). Psychological safety referred to "a shared belief held by members of a team that the team is safe for interpersonal risk-taking" (Edmondson, 1999, p. 350) allowing team members to express ideas, concerns, or errors and was measured with nine adapted items from Edmondson (1999) and Van Dyck (2005). We conducted analysis of variance with competition and psychological safety measured at baseline as outcome variables. The analyses revealed that our two groups, pediatricians (n = 89) versus 'other' (n = 25) did not differ with regard to both competition and psychological safety, with both ps >.05.

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Conclusion Results

These analyses revealed that participants in the coaching group experienced gains, including decreased job demands, increased personal resources, and a reduction of burnout symptoms: Participants perceived less job insecurity and work-family conflict, reported more autonomy and stronger personal resources, and showed a decrease in exhaustion, which is the main component of the burnout syndrome. The additional analyses conducted to test for potential effects of hospital or department affiliation on the intervention effectiveness indicated no drastic changes compared to the original analyses except that—when controlling for hospital affiliation—participants in the coaching group reported increased work engagement while no such change occurred in the control group. For all other outcome variables, neither hospital nor department affiliation influenced the effect of the intervention in a significant way, allowing us to conclude that the effect of the intervention is

largely stable across the hospital organizations and department affiliations involved in this study.

Discussion

Principal Findings

Burnout rates among medical residents and specialists are on the rise (Shanafelt et al., 2014). Consequently, calls for action that target the professional culture and the working environment (e.g., excessive job demands) in the medical profession have been put forward (Dzau et al., 2018; Eisenstein, 2018; Lemaire & Wallace, 2017; Wright & Katz, 2018). While urgently needed, system-level changes take time. Therefore, it is imperative to develop effective measures that boost resources in order to empower physicians to effectively deal with the extreme demands they face. Although coaching is frequently advised as an intervention for physicians with burnout, surprisingly, research on its effectiveness to create personal resources and prevent burnout in the medical field barely exists (Dyrbye et al., 2019; Grant et al., 2010; Green et al., 2006; Lovell, 2018). Potential remedies for physician burnout that have been put forward tend to be programs that focus on curing the symptoms of burnout, rather than preventing its onset. That is, these programs focus on mindfulness, resilience, or coping (Ireland et al., 2017; Panagioti et al., 2017; Wright & Mynett, 2019). Here, we have shown that individual coaching is a promising route to both resolve and prevent burnout symptoms from residency onwards. In other words, coaching can kill two birds with one stone. Physicians in the coaching group reported a decrease in exhaustion, the primary symptom and starting point of burnout (Maslach et al., 2001). Additionally, physicians showed increases in the personal resources psychological capital and self-compassion, both strong predictors of employee well-being and performance (Avey et al., 2010; Luthans et al., 2007; Neff, 2009). In line with the JD-R model (Xanthopoulou et al., 2007), we may conclude that equipping physicians with personal resources can be a decisive factor in the

prevention of burnout. That is, when physicians expand their personal resources, their ability to impact the environment increases (Hobfoll et al., 2003), enhancing the chance that they will feel equipped to face stressful job demands and ultimately preventing burnout.

Strengths and Weaknesses

To our knowledge, our study provides first evidence from a controlled intervention study on the effectiveness of coaching in both medical residents and specialists. Additionally, the two-wave design including a control group together with the additional analyses we conducted allow for a sound interpretation of the intervention effects demonstrating meaningful changes in a group of physicians (in training) who are motivated to accept assistance. However, it should be noted that the current study is limited by its quasi-experimental design. The initial differences between the groups may be the result of appropriate self-selection or may point towards a regression to the mean effect. As such, the implications of our study should be read with care. Second, although our analyses did not suggest that hospital or department affiliation influenced treatment effectiveness greatly, the multisite character of the study including different hospital and department affiliations in the groups limits our study's potential to draw causal conclusions. Third, our study design does not allow long-term inferences of coaching effectiveness. And finally, the coaching group consisted exclusively of pediatric residents and physicians. Consequently, more research is needed that evaluates the effectiveness of coaching in different specialties, allowing broader generalization for coaching effectiveness among healthcare professionals.

Strengths and Weaknesses in Relation to Other Studies

Intervention studies in healthcare are scarce. However, a recent study investigating the effects of coaching on physician well-being and distress has

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found that specialists that received 3.5 hours of coaching by telephone showed a reduction in burnout symptoms and improvements in overall quality of life and resilience (Dyrbye et al., 2019). While this study highlights the potential of coaching for specialists, the coaching method is not comparable to face-to-face coaching which makes comparison to our study difficult. Both studies, however, show that coaching leads to a reduction in burnout symptoms. Importantly, our study adds evidence that coaching improves well-being and fosters personal resources among residents too. These results suggest that coaching can be beneficial to healthcare professionals from residency onwards.

Possible Explanations and Implications

Our study provides initial evidence that coaching may also function as a preventive tool through development of personal resources rather than a cure only. It also shows that only six individual coaching sessions can reduce burnout symptoms. We, therefore, hope that our results inspire healthcare practitioners and policymakers to prioritize prevention rather than symptom alleviation. While collective action is sorely needed to bring changes on a system level, interventions like coaching can empower the whole spectrum of healthcare professionals from residents onwards to impact the healthcare system and eventually improve quality of care.

Unanswered Questions and Future Research

This study shows that professional coaching can reduce burnout symptoms and strengthen personal resources. However, it is unclear how robust these effects are over time, and if effects can be generalized across different medical specialties. Additionally, the working mechanisms of coaching are yet to be discovered, making these important inquiries for the future.

CHAPTER FOUR

PHYSICIAN EXHAUSTION AND WORK ENGAGEMENT DURING THE COVID-19 PANDEMIC: A LONGITUDINAL SURVEY INTO THE ROLE OF RESOURCES AND SUPPORT INTERVENTIONS

Abstract

Objectives

Physicians increasingly show symptoms of burnout due to the high job demands they face, posing a risk for the quality and safety of care. Job and personal resources as well as support interventions may function as protective factors when demands are high, specifically in times of crisis such as the COVID-19 pandemic. Based on the Job Demands-Resources Theory, this longitudinal study investigated how monthly fluctuations in job demands and job and personal resources relate to exhaustion and work engagement and how support interventions are associated with these outcomes over time.

Method

A longitudinal survey consisting of eight monthly measures in the period 2020-2021, completed by medical specialists and residents in the Netherlands. We used validated questionnaires to assess job demands (i.e., workload), job resources (e.g., job control), personal resources (e.g., psychological capital), emotional exhaustion, and work engagement. Additionally, we measured the use of specific support interventions (e.g., professional support). Multilevel modeling and longitudinal growth curve modeling were used to analyze the data.

Results

378 medical specialists and residents were included in the analysis (response rate: 79.08%). Workload was associated with exhaustion (γ = .383, p < .001). All job resources, as well as the personal resources psychological capital and self-judgement were associated with work engagement (γs ranging from -.093 to .345, all ps < .05). Job control and psychological capital attenuated the workload-exhaustion relationship while positive feedback and peer support strengthened it (all ps < .05). The use of professional support interventions (from a mental health expert or coach) was related to higher work engagement (*estimate* = .168, p = .032) over time. Participation in organized supportive

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group meetings was associated with higher exhaustion over time (*estimate* =.274, *p* = .006).

Conclusions

Job and personal resources can safeguard work engagement and mitigate the risk of emotional exhaustion. Professional support programs are associated with higher work engagement over time, whereas organized group support meetings are associated with higher exhaustion. Our results stress the importance of professional individual-level interventions to counteract a loss of work engagement in times of crisis.

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Physicians around the globe are faced with high workload, time pressure, emotional demands, and an increasing clerical burden (Lemaire & Wallace, 2017; Montgomery, 2014; Rotenstein et al., 2018). Moreover, they are ingrained in a system that tends to value perfectionism and lack of vulnerability over self-care and personal health (Montgomery, 2014; Montgomery et al., 2011; Shanafelt et al., 2019). Not unexpectedly, physicians report increasing distress and symptoms of burnout (Rodrigues et al., 2013; West et al., 2016), such as mental and physical exhaustion and professional inefficacy (Demerouti et al., 2001). Burnout is not only a heavy burden for individual physicians but can also have detrimental effects on the quality of medical care, including increased medical errors (Dewa et al., 2017; Dyrbye et al., 2013; Slayers et al., 2017; Tawfik et al., 2019; West et al., 2016), and it may cause attrition among medical staff. Altogether, the costs of physician burnout are high for individuals, patients, and the healthcare system as a whole. To make matters worse, the COVID-19 pandemic has recently added to physicians' work demands, posing an amplified threat to their (mental) health (Barello et al., 2020). Around the world, healthcare workers—particularly those on the frontline—have been greatly impacted both physically and mentally by the COVID-19 pandemic: Staff shortages leading to long working hours, a lack of protective equipment, seeing many patients die, the risk of contracting COVID-19, and worries about colleagues, family, and friends have taken a toll on healthcare workers' mental health. Indeed, several studies found that healthcare workers' mental health has worsened during the pandemic, with many reporting symptoms of depression, anxiety, and distress (Lai et al., 2020; Pappa et al., 2020; Rossi et al., 2020), and an increasing risk of physician burnout (Kannampallil et al., 2020). In order to combat physician burnout and thus ensure patient safety (Sheather & Slattery, 2021) in times of crisis and beyond, an important first step is to understand which factors can protect physicians' well-being.

While high job demands have long been recognized as the prime factor leading to (physician) burnout (Demerouti et al., 2001; Johnson et al., 2018), job and personal resources have the opposite effect: They help respond to job demands and stimulate learning and development (Bakker & Albrecht, 2018).

According to the Job Demands-Resources model (JD-R model; Demerouti et al., 2001), resources are not just important in their own right but also buffer the negative effects of high job demands on burnout (Bakker et al., 2005; Xanthopoulou et al., 2007). Moreover, resources promote work engagement, a positive state characterized by dedication, vigor, and absorption, which bolsters performance and reduces the involvement in medical errors (Loerbroks et al., 2017; Prins et al., 2009). In line with the JD-R model, research has shown that resources such as self-compassion, self-efficacy, and development opportunities are associated with lower levels of exhaustion and higher levels of work engagement in medical professionals, including residents (Olson et al., 2015; Scheepers et al., 2020; Smeds et al., 2020; Solms et al., 2019). Yet, these findings are based on inter-individual (or between-person) designs that are prone to bias due to individual confounds and ignore the fact that demands and resources can fluctuate within individuals over time. For example, physicians' workload may be higher during flu season, and their resources may change depending on a changing work context (e.g., change in experienced autonomy or support).

An Intra-Individual Perspective on Physicians' Exhaustion and Work Engagement

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Especially in the context of the COVID-19 pandemic, demands depend heavily on external factors such as fluctuating infection rates that are inevitably associated with hospital admissions. These oscillating work situations call for an intra-individual (or within-person) perspective in which job demands, resources, and outcomes fluctuate from month to month within the same person (see also Xanthopoulou et al., 2012). Hence, in this eight-wave longitudinal survey study, we adopt such an intra-individual perspective and investigate whether monthly job demands, job resources, and personal resources are associated with monthly exhaustion and work engagement (Figure 1). Specifically, we expect that monthly workload is positively associated with monthly exhaustion (Hypothesis 1), and that monthly job resources and

personal resources are positively associated with monthly work engagement (Hypothesis 2a and 2b). Finally, we expect that monthly job and personal resources moderate the relationship between monthly workload and exhaustion in such a way that the relationship is weaker in months where physicians experience more resources (Hypothesis 3a and 3b).

Figure 1
Research Model Based on the JD-R Model
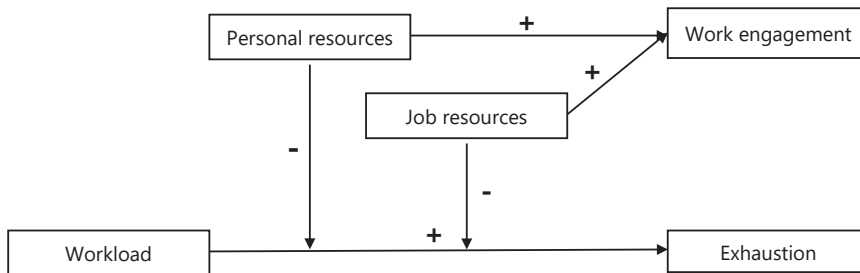
Interventions to Support Physician Well-Being

Understanding the effectiveness of support interventions is crucial to provide a timely remedy to physicians' distress. In times of high work demands, such as during the COVID-19 pandemic, physicians may need extra resources to cope with these demands. To support overburdened physicians, individual-level interventions may help (Lancet, 2020; Montgomery et al., 2019; Panagioti et al., 2017). Especially promising in this regard are professional support interventions, such as individual coaching, which has been shown to reduce burnout symptoms and strengthen the personal resources of healthcare professionals (Dyrbye et al., 2019; McGonagle et al., 2020; Solms et al., 2021). Other psychological support interventions, such as organized individual peer support (e.g., 'buddy' systems), organized supportive group meetings, and interventions aimed at improving collaborations and cohesion within teams, have been linked to physician well-being, also in the context of disease outbreaks (Carrieri et al., 2020; Kisely et al., 2020). As such, these types of

interventions may serve as effective strategies to protect the mental health of physicians during the COVID-19 pandemic.

Although these supportive and developmental interventions are recommended (for instance by the World Health Organization, see also Sheather & Slattery, 2021), and implemented in healthcare organizations, it is unclear to what extent physicians make use of and value these interventions in demanding times. Perhaps more importantly, it remains unclear how these interventions relate to burnout and work engagement over time. Here we investigate if different interventions aimed at support and personal development (i.e., a class or workshop, an app or online information, individual peer support, group support, and professional support from a mental health expert or coach) can help to mitigate burnout and revive engagement (Bertuzzi et al., 2021; Muller et al., 2020; Pollock et al., 2020). We employ an intra-individual monthly diary design to explore whether these support interventions for physicians are associated with the development of exhaustion and engagement over time.

Method

Design and Procedure

Data were collected from medical specialists and residents (including graduate physicians that were not in residential training) with various specializations and from diverse (academic and general) hospital and healthcare organizations throughout the Netherlands. Originally planned for 12 monthly measurements, data collection was finalized after eight measurement occasions (i.e., from June 2020 until March 2021) due to approaching data saturation and a decreasing number of respondents. The institutional Ethics Review Board of the University of Amsterdam approved this study on June 23, 2020; document 2020-WOP-12342. Written ethical approval was obtained from participants at the start of the study. See the description of the study sample for details.

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Measures

In line with the JD-R model we measured job demands (i.e., workload), job resources (i.e., managerial and peer support, job control, and positive feedback), and personal resources (i.e., self-judgment and psychological capital) as independent variables, and emotional exhaustion and work engagement as dependent variables. Additionally, we asked participants to report on specific interventions they had experienced in the preceding month. Finally, we assessed demographics and potential control variables.

Independent and Dependent Variables

The (in)dependent variables were assessed at each wave with validated but shortened scales (T1-T8) and were scored on a 7-point scale ranging from 1 (*totally disagree)* to 7 (*totally agree*). Because our study included multiple monthly waves during a period where healthcare workers were extremely strained, shortened scales were used to keep participants' taxation to a minimum and limit sample attrition. Initially, we asked participants to indicate if they had been absent due to vacation or sickness leave during the past seven working days. If participants had been absent, items measuring the (in) dependent variables referred to the past four weeks (i.e., 4-week survey version) instead of the past seven days (i.e., 7-days survey version; participants who had not recently been on leave, reported higher engagement). We included survey version as control variable in our analyses. This in order to prevent a distortion of people's answers due to the fluctuations in job demands and job and personal resources that are likely caused by holiday and sickness leave.

Workload was measured with three items from the Quantitative Workload Inventory (Spector & Jex, 1998) and one additional item that the researchers added to measure work-life conflict. An example item from the Quantitative Workload Inventory is: "I experience emotional strain from my job." The additional item is: "My personal life was under pressure from my work."

Managerial support and *peer support* were measured with the same two items from the multidimensional scale of perceived social support (Zimet et al., 1988) and one additional item added by the researchers. For peer support, the items referred to a colleague instead of a supervisor. An example item for managerial support is: "I have experienced support from my supervisor." An example item for peer support is: "My colleagues tried to really help me."

Job control was measured with two items from Jackson et al. (1993; see Solms et al., 2019) and one additional item from the Work Design Questionnaire (Morgeson & Humphrey, 2006). An example item is: "I can set my own pace of work."

Positive feedback was measured with three items, including two adapted items from the Work Design Questionnaire (Morgeson & Humphrey, 2006). An example item is: "I receive appreciation for my work from others."

Self-judgment was measured with four items from the Self-compassion scale (Neff & Vonk, 2009). An example item is: "When times are really difficult, I tend to be tough on myself."

Psychological capital was measured with four items reflecting the four subscales of the construct, that is hope, optimism, resilience, and self-efficacy (Luthans et al., 2007). We used items that were previously used in a Dutch sample (Vink et al., 2011). Because the original self-efficacy items refer to a managerial context (Luthans et al., 2007), we used the developed items by Vink and colleagues (2011) to measure general work-related self-efficacy that would fit the context of this study. All other items were part of the Psychological Capital Questionnaire (Luthans et al., 2007). An example item is: "When encountering difficult problems at my work, I knew how to solve them."

Emotional exhaustion was measured with three items from the Dutch version of the Maslach Burnout Inventory-General Survey (Schaufeli & Van

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Dierendonck, 2000; Schaufeli et al., 1996). An example item is: "I feel mentally drained from my work."

Work engagement was measured with three items from the Utrecht Work Engagement Scale, with one item measuring each dimension (i.e., vigor, dedication, and absorption; Schaufeli et al., 2002). An example item for the dimension of dedication is: "I feel enthusiast about my work."

Assessment of Intervention Use

Use of interventions was measured at each wave by asking participants if they had participated in the past four weeks in any of the following intervention programs offered to provide support and/or personal development: a class or workshop, an app, or online information on the intranet, organized individual support from a peer, organized supportive group meetings, professional support from a mental health expert or coach (individual or in a group), support from an occupational physician, or any other kind of support (Table 1). The latter two options were included to be exhaustive but were excluded from further analyses because of limited use. Then, participants rated the usefulness of these interventions on a scale from 1 (*very useless*) to 10 (*very useful),* and indicated the topics discussed during the intervention.

Table 1
Type of Support Interventions

Type of intervention	Example of content
1. A class or workshop	Management course, clinical knowledge
2. An app or online information on the intranet	Mindfulness, COVID-19 updates
3. Organized individual support from a peer	'Buddy' meetings with assigned colleague
4. Organized supportive group meeting	Intervision, debriefing
5. Professional support from a mental health expert or coach [a]	Professional coaching, counseling
6. Support from an occupational physician	-

Note. [a] Refers to individual or group-based programs

Demographics and Control Variables

At T1, we measured gender, age, job position (specialist, resident), and fulltime employment as well as learning goal orientation and trait anxiety. Learning goal orientation refers to a person's "preference to develop one's competence by acquiring new skills and mastering new situations" (VandeWalle, 2001, p. 163) and was measured because of its relevance for self-regulatory behaviors and its potential association with engagement and intervention use (Bakker et al., 2020). We measured learning goal orientation with four items from VandeWalle (2001). Trait anxiety refers to a stable proneness to experience state anxiety frequently (Grös et al., 2007; Spielberger et al., 1971) and was measured because of its potential association with workload and exhaustion (Koutsimani et al., 2019). We used four items from the State-Trait Anxiety Inventory (1998), and two additional items from the State-Trait Inventory for Cognitive and Somatic Anxiety (Grös et al., 2007). At each wave, we measured survey version (i.e., 7-day version, 4-week version), contact with COVID-19 patients in the prior month (yes, no), and anxiety of COVID-19 infection (1 = *not at all*, 5 = *very much*), because of their potential associations with workload and exhaustion (Koutsimani et al., 2019).

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Analytical Approach

Because of the hierarchical structure of our data, we conducted hierarchical linear modeling (i.e., multilevel models) using M*plus* 7.31 (Muthén & Muthén). For testing the hypothesized JD-R relationships, we performed a series of multilevel path analyses with emotional exhaustion and work engagement as dependent variables, in which the eight measurement times (level 1) were nested within individuals (level 2). See Appendix 4.1 for details about the path analyses.

To explore the use, usefulness, and the association of interventions with key study outcomes, we first examined the within- and between-person level correlations between the key study variables and the use of interventions.

Second, we examined the extent to which participants found the interventions useful. Finally, we examined the associations between interventions and the trajectory of exhaustion and engagement over time with parallel process growth modeling using M*plus* statistical software (Muthén & Muthén). Incomplete data points were excluded from the analyses. We examined several models (see results section) and used conventional model fit indices and growth components to estimate the fit of the models to the data.

Results

Study Sample

Of all eligible participants who started the first survey, 478 participants completed it and gave consent. Due to an error in Qualtrics, three participants did not consent to but completed the survey; two of them were excluded from the analyses. Participants who did not complete the first survey were not invited for subsequent surveys. Because we were interested in the development of participants over time, we only included participants who had completed at least three of the eight surveys in the analyses (Figure 2). The final sample consisted of 378 participants (response rate: 79.08% of baseline sample; 74.1% women; 48.7% medical specialists, 51.3% medical residents), of which 50.3% completed all eight surveys. Mean age of participants was 38.6 years (10.41) and 41.3% of them (n = 156) indicated to work fulltime (Table 2).

Figure 2

Flowchart Depicting Exclusion Procedure
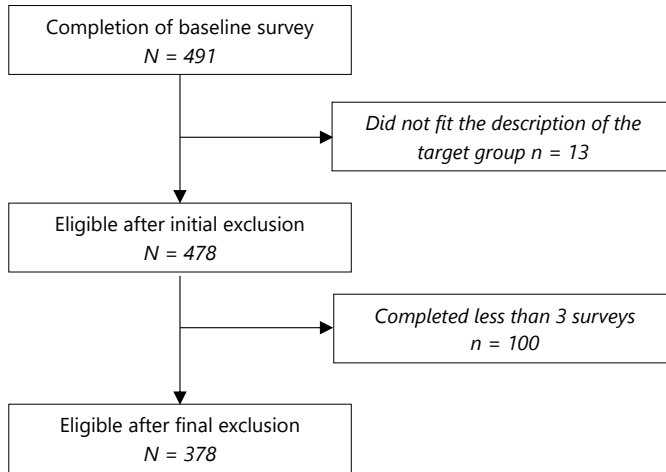
Note. Participants who did not complete the first survey were not invited for subsequent surveys. Due to an error in Qualtrics, three of 491 participants did not consent to the survey. Since all three participants completed the baseline survey, we initially included them. Two of them did not fill in any subsequent surveys and were therefore excluded as part of the final exclusion criteria.

Table 2

Demographics of Residents and Specialists Participating in a Longitudinal Survey Study June 2020 Until March 2021

Characteristics	Residents	Specialists
	No (% of 194)	No (% of 184)
Gender		
Female	155 (79.9%)	125 (67.9%)
Male	39 (20.1%)	59 (32.1%)
Age [a,b]		
20-30 years	84 (43.3%)	1 (0.5%)
31-40 years	107 (55.2%)	60 (32.6%)
41-50 years	2 (1.0%)	59 (32.1%)
51-60 years		47 (25.5%)
61 years and older		17 (9.2%)
Fulltime employment [c]	93 (47.9%)	63 (34.2%)
Home situation		
Cohabitation [c,d]	161 (83.0%)	158 (85.9%)
Children [c], one or more	34 (17.5%)	116 (63.0%)

Note. [a] Due to rounding, the overall percentage can slightly deviate from 100%.
[b] Percentage values include missing values (*n* = 1) for residents.
[c] Percentage values include missing values (*n* = 1) for specialists.
[d] with partner or other.

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Preliminary Analyses

Multilevel Structure

We first assessed whether multilevel modeling was justified for our data by examining the within- and between-individual variance (i.e., the intraclass-correlation coefficient; ICC) for the model variables by computing intercept-only baseline models. Results showed that 47% of the variance in exhaustion, and 44% of the variance in engagement were attributable to within-person variations, justifying our multilevel approach. The ICCs for all study variables, displayed in Table 4.1 in the appendix, varied from 46.4% to 59.2%.

Control Variables

Prior to testing the hypotheses, we estimated the associations of our potential control variables with both dependent variables (see Table 3, control model). We only included those variables that showed significant correlations with either exhaustion or work engagement (see Table 4.1 in the appendix). Based on these results (described in Appendix 4.2), we included time, survey version, anxiety of COVID-19 infection, trait anxiety as well as learning goal orientation—all of which showed relationships with exhaustion and/or work engagement—as control variables in the model testing. The control model showed significant improvement in model fit over the null model, ($\Delta\chi^2 = 489.656$, $\Delta df = 14$, $p < .001$)

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Table 3

Multi-Level Multiple Regression of Emotional Exhaustion and Work Engagement on Workload, Job Resources, Personal Resources, and the Workload x Resources Interaction Terms

Predictors	Emotional exhaustion (B)				Work engagement (B)			
	Null model	Control model	Main effect model	Interaction model	Null model	Control model	Main effect model	Interaction model
Intercept	2.95***	2.99***	2.87***	2.86***	5.29***	5.09***	5.07***	5.07***
Level 2 variables								
Gender[a]	--	-0.086	--	--	--	-0.003	--	--
Job position[b]	--	0.014	--	--	--	0.080	--	--
Learning goal Orientation	--	-0.045	-0.040	-0.038	--	0.314***	0.308***	0.308***
Trait anxiety	--	0.474***	0.472***	0.472***	--	-0.269***	-0.278***	-0.277***
Level 1 variables								
Time	--	0.050*	0.030	0.033	--	-0.020	-0.005	-0.005
Survey version[c]	--	-0.027	-0.007	-0.005	--	0.098***	0.078***	0.078***
Infection anxiety	--	0.068**	0.023	0.022	--	-0.040*	-0.025	-0.025
Workload	--	--	0.383***	0.380***	--	--	-0.046*	-0.046*
Managerial Support	--	--	-0.012	-0.007	--	--	0.054**	0.054**
Peer support	--	--	-0.012	-0.016	--	--	0.081***	0.081***
Job control	--	--	-0.078***	-0.078***	--	--	0.041*	0.041*
Positive Feedback	--	--	-0.099***	-0.100***	--	--	0.345***	0.345***
Self-judgment	--	--	0.096***	0.098***	--	--	-0.093***	-0.093***

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Table 3 continued

Predictors	Emotional exhaustion (B)				Work engagement (B)			
	Null model	Control model	Main effect model	Interaction model	Null model	Control model	Main effect model	Interaction model
Psych. capital	--	--	-0.088***	-0.085***	--	--	0.187***	0.187***
Workload*man. support	--	--	--	-0.017	--	--	--	--
Workload*peer support	--	--	--	0.049*	--	--	--	--
Workload*control	--	--	--	-0.061**	--	--	--	--
Workload*feedback	--	--	--	0.068**	--	--	--	--
Workload*judgement	--	--	--	-0.008	--	--	--	--
Workload*psycap	--	--	--	-0.090***	--	--	--	--
-2 log likelihood	14080.72	13591.064	11981.73	11944.456	14080.72	13591.064	11981.73	11944.456

Note. [a] 0 = female, 1 = male; [b] 0 = resident, 1 = medical specialist; [c] 0 = 1-month version, 1 = 7-day version. Measurement time runs from 0 to 7. The level 2 variables are grand-mean centered. The level 1 variables are person-mean centered. We report the standardized regression coefficients and intercepts. *p < .05, **p < .01. ***p < .001 (all 2-tailed).

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Hypotheses Testing

Direct Effects

H1 stated that workload would be positively associated with exhaustion. The main effect model (Table 3) supported this hypothesis: Workload was positively related to exhaustion (γ = .383, p < .001). H2 stated that job resources (H2a) and personal resources (H2b) would be positively associated with engagement. Results supported H2a in that all four job resources were positively related to engagement (γs ranging from .041 to .345, all ps < .05), and H2b in that psychological capital was positively related to engagement (γ = .187, p < .001), and self-judgment was negatively related to engagement (γ = -.093, p < .001). The main effect model resulted in a significant improvement in explained variance of our outcomes over the control model ($\Delta\chi^2$ = 1609.334, Δdf = 10, p < .001

Interaction Effects

H3a stated that job resources would moderate the relationship between workload and exhaustion. The interaction model (Table 3) revealed that the interaction terms for job control (γ = -.061, p = .003), positive feedback (γ = .068, p = .003), and peer support (γ = .049, p = .018) but not for managerial support were significantly related to exhaustion. Simple slope tests (with high and low values referring to values 1 SD above and below the mean, respectively; here we report the unstandardized estimates for the new parameters) revealed that the positive link between workload and exhaustion was weaker when job control was high (γ = .392, p < .001) rather than low (γ = .512, p < .001); stronger when feedback was high (γ = .522, p <.001) rather than low (γ = .382, p < .001); and stronger when peer support was high (γ = .503, p < .001) rather than low (γ = .401, p < .001). These results indicate that the negative impact of workload on exhaustion was buffered by more job control and amplified by more positive feedback and peer support. Therefore, H3a was not supported. H3b stated that personal resources would moderate the relationship between workload and exhaustion. The interaction model (Table 3) revealed that the interaction term for psychological capital was negatively related to exhaustion

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(γ = -.090, p <.001), while the interaction term for self-judgment was unrelated to exhaustion. A simple slope test revealed that the positive link between workload and exhaustion was weaker when psychological capital was high (γ = .368, p < .001) rather than low (γ = .536, p < .001; Figure 3), indicating that more psychological capital, but not lower self-judgment, can buffer the negative impact of workload on exhaustion. Thus, H3b was partly supported. The interaction model resulted in a small but significant improvement in explained variance over the main effects model ($\Delta\chi^2$ = 32.27, Δdf = 6, p < .001).

Figure 3
Psychological Capital as Moderator of the Workload-Exhaustion Relationship
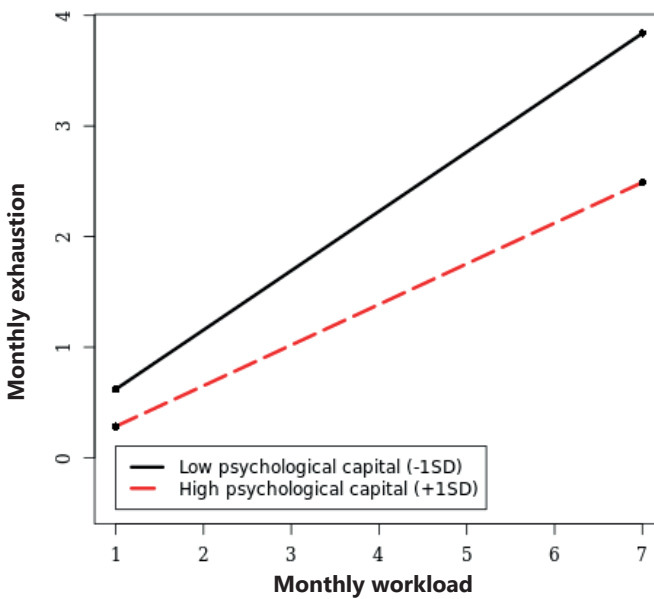
Interventions: Use, Usefulness, and Associations With Key Outcomes

One of the key goals of this study was to understand how participation in support programs relates to physicians' well-being over time. To that end, we assessed participants' use of interventions, the extent to which they perceived

interventions as useful, and how interventions related to exhaustion and work engagement.

Use of Interventions

Across the eight measurements, participants most frequently participated in a course/workshop, and organized supportive group meeting (see Table 4.2 in the appendix). From T1 to T4, participants also frequently used online information/app, while from T5 to T8, participants more frequently sought professional support as compared to using information/app or organized individual peer support. Next, we explored whether participation in specific interventions was associated with workload, job and personal resources, exhaustion, and work engagement. Both the between-level and within-level results (see Table 4.3 in the appendix) indicate that participants with relatively higher demands (i.e., workload), lower resources (e.g., lower job control, more self-judgment), and more symptoms of exhaustion were more likely to use support interventions such as organized individual peer support, organized supportive group meetings, and professional support. See Appendix 4.3 for a detailed description of those associations.

Usefulness of Interventions

Next, we explored the extent to which participants experienced specific interventions as useful. To this end, we aggregated the usefulness scores across measurements. As displayed in Table 4.2 in the appendix, participants perceived professional support ($M = 8.00$, $SD = 1.31$) and organized individual peer support ($M = 7.92$, $SD = 1.25$) as most useful in comparison to an organized supportive group meeting ($M = 7.46$, $SD = 1.14$), a course/workshop ($M = 7.53$, $SD = 1.04$) and online information/app ($M = 6.78$, $SD = 1.51$).

Intervention Use: Associations With Exhaustion and Work Engagement

To explore the association between intervention use and exhaustion and work engagement, we tested several models. See Appendix 4.4 for information on model testing, the growth factor estimates (i.e., intercept and slopes), and the

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model fit of the initial parallel process growth model excluding any predictors. Except for the slope factor means and their variance, we report the standardized estimates. In model 1, we examined the associations between all potential control variables and the intercepts (i.e., starting values at T1) and slopes (i.e., trajectories reflecting change over time) of exhaustion and work engagement. 376 participants were included in the model due to missing values on the control variables. The model fit was good, CFI = .953, TLI = .945, RMSEA = .043. Analyses revealed that: (1) trait anxiety and anxiety of COVID-19 infection were associated with higher mean levels of exhaustion and lower mean levels of work engagement at T1, (2) learning goal orientation and job position were associated with higher mean levels of work engagement at T1, (3) trait anxiety was associated with change in (i.e., the slope of) exhaustion, and (4) age, learning goal orientation, and anxiety of COVID-19 infection were associated with change in work engagement. See Tables 4.4 and 4.5 in the appendix for details on these estimates. These variables were therefore included in the second model, in which we explored the associations between professional support and the key study variables. For each intervention category, we calculated a mean score consisting of the number of times that a participant took part in the intervention, divided by the number of completed surveys (see note, Table 4.3 in the appendix). Model 2 and 3 included 377 participants due to a missing value on one of the control variables.

In model 2, we estimated how relatively higher (vs. lower) mean levels (i.e., intercepts) of exhaustion and work engagement were associated with the use of professional support and how the use of professional support, in turn, was related to change in (i.e., the slopes of) exhaustion and work engagement. The model fit the data well, CFI = .964, TLI = .958, RMSEA = .041. Estimates for the covariances between growth factors (see Appendix 4.4) were largely identical to the initial model: Results showed that the intercepts of exhaustion and work engagement (r = -.554, p < .001), and the slopes of both constructs (r = -.60, p < .001) were negatively associated: Higher levels in exhaustion were associated with lower levels in work engagement (and vice versa), and greater increases in exhaustion over time were associated with smaller increases in

engagement (and vice versa). The covariance between the intercept and slope of work engagement—but not of exhaustion—was negative (r = -.235, p = .016) indicating that higher initial levels in work engagement were associated with smaller slope values. Furthermore, higher initial levels of exhaustion and work engagement (i.e., intercepts) did not predict the use of professional support interventions (*estimate* = .104, p > .05, *estimate* = -.031, p > .05, for exhaustion and work engagement, respectively). The use of professional support interventions, in turn, was not associated with the slope of exhaustion (*estimate* = -.131, p = .117) but with the slope of engagement (*estimate* = .171, p = .029). These results indicate that an increase in professional support was associated with an increase in the slope of engagement, signaling that people who participated in professional support interventions reported a relative improvement in their level of work engagement over time.

In model 3, we explored the associations between alternative interventions (i.e., course/workshop, online information/app, organized individual peer support, organized supportive group meeting) and the key study variables. To this purpose, we examined the association between all five types of interventions and the intercepts and slopes of exhaustion and work engagement simultaneously. We included covariances between interventions in the model that reached significance. The model fit the data well, CFI = .966, TLI = .956, RMSEA = .036. Results for intercept-intercept, slope-slope, as well as intercept-slope covariation, were largely identical to the results presented in model 2 (see Tables 4.4 and 4.5 in the appendix). The slope factor mean for exhaustion was, contrary to the initial models, significant in this final model (*estimate* = 0.022, p = .037), indicating an average increase in exhaustion over time. The results for professional support were comparable to those reported in model 2 but extended insofar that higher levels of exhaustion and work engagement predicted more participation in an organized individual peer support intervention (*estimate* = .297, p = .004; *estimate* = .250, p = .006 for exhaustion and work engagement, respectively). Participation in an organized supportive group meeting was associated with the slope of exhaustion (*estimate* =.274, p = .006), indicating that an increase in participation in

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organized supportive group meetings was associated with an increase in the slope of exhaustion, signaling that people who participated in supportive group meetings reported a relative deterioration of exhaustion over time.

Discussion

To prevent physician burnout, it is crucial to uncover the factors that thwart and support physician well-being in daily practice (Dyrbye et al., 2017; Montgomery et al., 2019), and to understand how interventions can contribute to these factors in times of increased stress, such as during the COVID-19 pandemic (Hartzband & Groopman, 2020; Montgomery et al., 2019; Panagioti et al., 2017; Torrente et al., 2021; West et al., 2018; Wright & Katz, 2018). In this study, we took an intra-individual (i.e., within-level) perspective and surveyed a sample of physicians for eight consecutive months to deepen our understanding of how fluctuations in job demands and job and personal resources related to their feelings of exhaustion and work engagement. In addition, we explored the associations between multiple support programs and physicians' exhaustion and work engagement.

Our study revealed that, consistent with JD-R theory and previous findings (Bakker, 2014; Sonnentag & Kühnel, 2016; Weigelt et al., 2021), exhaustion was higher in months when workload was higher, and work engagement was higher in months when job and personal resources were higher. Furthermore, in support of the 'buffer'-hypothesis (Bakker et al., 2005), the resources control and psychological capital attenuated the negative effects of workload on exhaustion. Positive feedback and peer support however strengthened this relationship. Furthermore, physicians with relatively higher demands, lower resources, and more symptoms of exhaustion were more likely to use person-oriented support interventions (e.g., organized individual peer or professional support). Additionally, we found that professional support interventions were associated with a relative improvement in work engagement, while organized group support interventions were associated with a relative deterioration of exhaustion.

Resources That Buffer or Intensify Exhaustion

Our finding that positive feedback and peer support strengthened the workload-exhaustion relationship is surprising given that common stress models unanimously predict positive effects of resources on stress and well-being (Demerouti et al., 2001; Hobfoll, 1989; Karasek, 1979). We see three possible explanations for this finding. First, it is possible that peer support, where physicians share their concerns with each other, induces rather than reduces their emotional state. This phenomenon, in which the (negative) emotions of the people around us rub off and cause similar emotional experiences, is called emotional contagion (Barsade, 2002), and might explain why peer support amplified emotional exhaustion when physicians experienced high workload. This phenomenon might also explain our finding that organized group support interventions lead to increases in exhaustion.

Second, job resources may only (or particularly) be helpful when they are functional for the task at hand. This idea is based on the Demand-Induced Strain Compensation Model (De Jonge & Dormann, 2003) that states that the adverse effects of high job demands can best be countered through functional, *corresponding* types of job resources. Based on this 'matching principle,' physicians' high workload might best be countered with resources that reduce physical and cognitive load (i.e., help to pursue goals, increase self-efficacy or autonomy; Van den Tooren & De Jonge, 2008) rather than 'social' job resources (e.g., feedback and peer support; Schaufeli, 2017).

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Third, it is possible that positive feedback can incentivize effort and hardiness because people tend to protect their resources and aim to uphold their positive self-views (Hobfoll, 1989; Leary & Baumeister, 2000). Notably, although positive feedback strengthened rather than weakened the workload-exhaustion relationship, it also showed to have a direct and negative relationship with exhaustion and a positive one with work engagement. This suggests that physicians who experience positive feedback are generally less prone to emotional exhaustion and more engaged. At the same time, the

beneficial role of positive feedback for emotional exhaustion diminishes as workload increases.

A Problem Shared is (not Always) a Problem Halved

Physicians were more inclined to use person-oriented support interventions such as individual peer support, group peer support, and professional support when they had fewer resources. They also experienced individual peer support and professional support interventions as most useful. This finding is in line with previous intervention studies indicating that interventions are taken up especially in times when resources are low and strain is high (Rø et al., 2007; Solms et al., 2021). Yet, only professional support interventions contributed to physicians' well-being by increasing work engagement, while organized group support interventions further increased exhaustion. The latter finding is unexpected but in line with our finding that peer support worsened physicians' well-being when experiencing high workload. That is, although venting to peers might feel liberating and relieving in the short run, it might not be functional because this emotional support does not necessarily lead to actual changes and solutions that improve physicians' well-being and can even induce emotional contagion: The negative emotions of peers may spill over, may bring down individual team members, and may trigger their further depletion (Barsade, 2002; Petitta et al., 2017). Thus, professional support interventions are preferable over peer support interventions, as professional interventions provide individuals with both emotional support and task support by helping them to develop (cognitive or behavioral) strategies to solve their problems in a tangible and sustainable way (Theeboom et al., 2014). This is in line with previous findings indicating that receiving professional support (including goal setting and action planning) helped physicians to strengthen their personal resources and increase work engagement (McGonagle et al., 2020).

Strengths and Limitations

A major strength of this study is its multi-wave within-level design, allowing for a realistic display of the fluctuations in physicians' work environment amid the COVID-19 pandemic. Moreover, this design reduces Type II errors and confounds associated with individual differences. As such, this strong methodological approach extends existing knowledge and can form an excellent basis for designing much called-for effective interventions to prevent and reduce physician burnout and promote work engagement (West et al., 2016), both of which have been linked to quality of care (Loerbroks et al., 2017).

However, our study also has limitations. Although our data showed support for the hypothesized relationships, reversed or reciprocal relationships remain possible. For example, job resources may influence work engagement while work engagement may in turn also foster job resources (Llorens et al., 2007; Xanthopoulou et al., 2009a). Such reciprocal relationships may be tested with experience sampling designs examining cross-lagged relationships, but it should be noted that definite causal conclusions can only be drawn from experimental designs (De Lange, 2005; Gabriel et al., 2019). Another limitation is the predominantly female sample in this study, although the high percentage of female physicians is representative of the Dutch labor market. Even though we controlled for gender in our analyses, our findings may be less generalizable to male physicians. We also note that the focus of this study was on emotional exhaustion, rather than the complete burnout syndrome. Future studies could extend these findings by including the two remaining facets of burnout, depersonalization, and personal accomplishment. Furthermore, we used shortened scales for all study variables due to practical constraints. We recognize that it would have been preferred to use the original scales, however, we expect that using shortened scales—that all showed good reliability—did not impact our results (see also Fisher et al., 2016; Matthew et al., 2022). A final limitation is that our study does not differentiate between physicians at different career stages. Because attending and junior physicians may resort to

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different resources when facing high job demands (Solms et al., 2019), it is important to examine and—when necessary—customize interventions to the needs of specific target groups.

Practical Implications

Understanding which personal and job factors protect or jeopardize physician well-being is a prerequisite for designing effective interventions. Based on our findings, we advise to implement interventions that predominantly foster autonomy and psychological capital, both resources that can mitigate the negative impact of high workload on emotional exhaustion. At the same time, our results stress the importance of both job and personal resources for protecting physicians' work engagement in times of crisis. Yet, we need to note that physicians who experience high job demands tend to seek the support from their peers, while such support from peers can pose additional demands and thus may worsen employee well-being.

The finding that professional support interventions were associated with higher work engagement but not lower exhaustion has several important implications. Medical centers often implement a myriad of individual-level interventions (e.g., mindfulness, stress-management; for a review see Panagioti et al., 2017) aimed to boost physician resilience and vitality. In practice, the effects of these interventions are rarely assessed. While our findings suggest that professional support programs cannot halt or mitigate physicians' exhaustion in times of a structurally increased workload, such as during the COVID-19 pandemic, they do halt an erosion of work engagement. Our findings suggest that hospital organizations could invest more resources into individual support programs such as professional coaching, which has shown to boost physicians' personal resources (e.g., psychological capital) and improve their well-being, including work engagement (McGonagle et al., 2020; Solms et al., 2021). Additionally, the effects of these professional individual interventions may translate to the team level as it may help to

cultivate an open and psychologically safe team culture, which benefits patient care (Speroff et al., 2010; Weaver et al., 2013).

Conclusion

Employing a multi-wave within-level design, this study showed that professional support programs show promise in strengthening work engagement, even in periods of increased stress such as the COVID-19 pandemic. Organized group support meetings were associated with higher rather than lower exhaustion. Personal and job resources such as psychological capital and job control can help physicians manage the demands of their work. Although system-level changes are needed to tackle physician burnout, professional person-centered interventions rather than social exchanges with peers can provide timely solutions to sustain physicians' work engagement in times of crisis.

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Appendix

Physician exhaustion and work engagement during the COVID-19 pandemic: A longitudinal survey into the role of resources and support interventions

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4.1 Path Analyses

Each regression analysis was built on the basis of a series of increasingly complex models (Raudenbush & Bryk, 2002), successively introducing the intercept (null model), control variables (control model), within-level predictor variables (main effects model), and hypothesized interaction effects (interaction model). For all models, we tested model improvement by calculating the change in deviance (i.e., change in –2 times the log-likelihood statistic; -2LL statistic) and the change in variance explained in the outcome variables.

The demographic and control variables that were only assessed at Time 1 were added at the between-level and were grand-mean centered. The control variables that were assessed at each wave were added at the within-level and person-mean centered. Additionally, we included time (coded as 0 to 7) as a covariate because the variables that were assessed at each wave may vary over time (Kreemers et al., 2018). The parameters in all models were estimated using maximum likelihood estimation.

Summary: Change in Variance

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Intercept-Only Baseline Models: We compared two intercept-only models with either fixed or random intercepts. These analyses revealed that inclusion of a random intercept (i.e., allowing for between-person variance) resulted in a better fit to the data. Consequently, we included a random intercept in all analyses.

Control Model: Adding the control variables led to a decrease of the within-individual residual variance from 0.997 to 0.986 and 0.575 to 0.567 for exhaustion and engagement respectively, indicating that the control variables can explain additional 1.1 (1.4)% of the variance in exhaustion (engagement).

Main Effects Model: Adding the predictor variables led to a decrease of the within-individual residual variance from 0.986 to 0.673, and 0.567 to 0.352 for

exhaustion and engagement respectively, indicating that the predictor variables can explain an additional 31.4 (37.4)% of the variance in exhaustion (engagement).

Interaction Model: Adding the interaction terms in the final model led to a decrease of the within-individual residual variance from 0.673 to 0.662, indicating that 1.1% of the variance was explained by the interaction terms.

4.2 Associations Between Potential Control Variables and Exhaustion and Work Engagement

On the within-person level, our analyses revealed that anxiety of COVID-19 infection was positively related to exhaustion (γ = .068, SE = .020, p = .001) and negatively related to engagement (γ = -.040, SE = .020, p = .046). Time was positively related to exhaustion (γ = .050, SE = .021, p = .016) but unrelated to engagement, indicating that participants reported higher exhaustion over time. Survey version was unrelated to exhaustion but positively related to engagement (γ = .098, SE = .021, p < .001), indicating stronger engagement in months without (sickness or holiday) leave.

On the between-person level, trait anxiety was positively related to exhaustion (γ = .474, SE = .045, p < .001), and negatively related to engagement (γ = -.269, SE = .049, p < .001). Learning goal orientation was unrelated to exhaustion but positively related to engagement (γ = .314, SE = .048, p < .001). Gender and job position were unrelated to both exhaustion and engagement and accordingly not included in subsequent models (Nezlek, 2020). The control model showed significant improvement in model fit over the null model, ($\Delta\chi^2$ = 489.706, Δdf = 14, p < .001). Adding the control variables led to a decrease of the within-individual residual variance from 0.997 to 0.986 and 0.575 to 0.567 for exhaustion and engagement respectively, indicating that the control variables can explain additional 1.1 (1.4)% of the variance in exhaustion (engagement).

As shown in Table 4.1 in the appendix, anxiety of COVID-19 infection and trait anxiety related positively to exhaustion ($r_{between}$ = .38, $r_{between}$ = .45, respectively, ps < .001) and negatively to engagement ($r_{between}$ = -.33, $r_{between}$ = -.30, respectively, ps < .001). Gender related negatively to exhaustion ($r_{between}$ = -.14, p = .008), indicating more exhaustion among women. Positive correlations between job position, survey version, and learning goal orientation with engagement ($r_{between}$ = .14, $r_{between}$ = .15, $r_{between}$ = .33, respectively, ps < .01) indicate that medical specialists and participants who had not recently been on leave, reported higher engagement. Finally, exhaustion and engagement were negatively correlated ($r_{between}$ = -.60, p < .001).

4.3 Associations Between Intervention Use and Key Study Variables

Results at the between-person level (see Table 4.3 in the appendix) showed that participants who experienced more job resources such as managerial support, peer support, and positive feedback used more courses/workshops. Participants who reported relatively more workload and positive feedback used more online information or apps. Participants who reported higher managerial support, self-judgement, and exhaustion used more organized individual support. Participants who reported relatively more managerial and peer support were more involved in organized supportive group meetings. Participants who reported relatively more workload, self-judgment, and exhaustion, and lower job control used more professional support.

Results at the within-person level showed that managerial support was related to the use of organized individual peer support, which means that in months in which participants experienced more managerial support, they were more likely to use organized individual peer support. In a similar vein, in months in which participants experienced lower job control, they were more likely to seek online information and to attend an organized group meeting. Also, in months in which participants reported higher self-judgment, they were more

likely to use organized individual support and professional support. Finally, in months in which participants felt more exhausted, they were more likely to seek professional support.

4.4 Associations Between Interventions and Exhaustion and Work Engagement – Model Testing and Growth Factor Estimates

For all models, the loadings of the slope factors were fixed to 0 for the time 1 observations, which represents the intercepts or starting levels of exhaustion and work engagement. We modeled a linear pattern of change from this intercept on by increasing the loading of the slope factor by 1 for each subsequent time point. The coefficients of the intercepts were fixed to 1, which is the default parameterization in M*plus*. Furthermore, we allowed covariation between residuals at each time point across the two growth processes to avoid correlations exceeding 1 between the slopes of exhaustion and work engagement.

In the first, initial model, we examined the intercepts (i.e., the starting values) and the slopes (i.e., trajectories reflecting change over time) for exhaustion and work engagement in a parallel latent growth model. We allowed covariation between the intercepts and slopes of exhaustion and work engagement, the intercept of exhaustion (work engagement) and the slope of work engagement (exhaustion), and between both intercepts, and both slopes. The model fit was good with CFI = .970, TLI = .968, RMSEA = .046. The slope factor mean for exhaustion was positive but not significant (*estimate* = 0.019, p = .088). The slope factor mean for work engagement was negative but not significant (*estimate* = -0.012, p = .157). Both results indicate that, on average, there was no increase or decrease in exhaustion or work engagement over time. However, the variance of both slopes was significant (*estimate* = 0.015, p < .001, *estimate* = 0.009, p < .001, for exhaustion and work engagement, respectively) indicating that there was variability in slopes across individuals.

Results showed that the intercepts of exhaustion and work engagement ($r = -.625$, $p < .001$), and the slopes of both constructs ($r = -.621$, $p < .001$) were negatively associated: Higher levels in exhaustion were associated with lower levels in work engagement (and vice versa), and increases in the slope of exhaustion over time were associated with decreases in the slope of engagement (and vice versa). The covariances between the intercept and slope of work engagement and the intercept and slope of exhaustion were negative ($r = -.269$, $p = .002$; $r = -.226$, $p = .021$), indicating that higher initial levels in work engagement and exhaustion were associated with smaller slope values.

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Table 4.1
Means, Standard Deviations, Intra-Class Correlations, and Intercorrelations Among all Study Variables

	M	SD	ICC	1.	2.	3.	4.	5.	6.	7.
1. Gender: Female [a]	74.1%	-	-	-						
2. Age	38.61	10.41	-	.23***	-					
3. Job position: Specialist [b]	48.7%	-	-	.14**	.75***	-				
4. Fulltime [c]	41.3%	-	-	.26***	-.09	-.14**	-			
5. Learning goal orientation	5.20	0.80	-	.01	.06	.06	.06	-		
6. Trait anxiety	3.20	1.25	-	-.13**	-.16**	-.20***	-.05	-.10*	-	
7. Contact COVID-19 patients [d]	0.32	0.33	-	.02	-.10	-.02	.02	-.06	-.09	-
8. Anxiety COVID-19 infection	2.60	0.61	-	-.01	.12*	.01	.02	-.06	.23***	.01
9. Survey version [e]	0.82	0.16	-	.05	.02	.06	.10	.04	-.06	.04
10. Workload	3.68	1.07	.557	-.09	.09	.09	-.02	-.00	.33***	.09
11. Managerial support	4.63	1.09	.542	.02	-.32***	-.24***	.03	.14**	-.09	.03
12. Peer support	5.04	0.85	.509	.03	-.12*	-.05	.08	.20***	-.20***	.05
13. Job control	4.61	0.85	.464	.15**	.13**	.14**	.07	.19***	-.18***	-.05
14. Positive feedback	4.87	0.80	.505	.05	-.01	.08	.08	.30***	-.24***	.03
15. Self-judgment	3.34	1.24	.592	-.16**	-.06	-.11*	-.10*	-.02	.59***	.03
16. Psych. capital	4.97	0.69	.558	.12*	.12*	.22***	.06	.41***	-.35***	.03
17. Emotional exhaustion	3.10	1.13	.526	-.14**	-.06	-.09	.01	-.08	.45***	.06
18. Work engagement	4.56	0.91	.564	.04	.01	.14**	.08	.33***	-.30***	.01

Table 4.1 continued

	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18
1. Gender: Female [a]											
2. Age											
3. Job position: Specialist [b]											
4. Fulltime [c]											
5. Learning goal orientation											
6. Trait anxiety											
7. Contact COVID-19 patients [d]	.06**	.09***	.09***	.05*	-.02	-.02	-.02	-.02	-.00	.03	-.01
8. Anxiety COVID-19 infection	-	-.04	.10***	.02	.02	-.01	-.01	.06**	-.03	.08**	-.05*
9. Survey version [e]	-.08	-	-.02	-.01	-.00	.03	.01	-.04*	.03	-.03	.09***
10. Workload	.37***	-.03	(.84-.87)	-.05*	-.03	-.33***	-.14***	.37***	-.22***	.51***	-.20***
11. Managerial support	-.21***	.07	-.26***	(.91-.93)	.28***	.26***	.36***	-.07**	.22***	-.12***	.27***
12. Peer support	-.13*	.03	-.17**	.63***	(.90-.94)	1.7***	.35***	-.06**	.29***	-.11***	.30***
13. Job control	-.21***	.07	-.52***	.35***	.34***	(.76-.83)	.28***	-.12***	.28***	-.29***	.26***
14. Positive feedback	-.22***	.06	-.33***	.54***	.63***	.56***	(.80-.88)	-.15***	.51***	-.26***	.55***
15. Self-judgment	.24***	-.12*	.59***	-.22***	-.21***	-.38***	-.37***	(.91-.95)	-.27***	.30***	-.24***
16. Psych. capital	-.28***	.09	-.37***	.44***	.53***	.59***	.77***	-.48***	(.77-.86)	-.29***	.47***
17. Emotional exhaustion	.38***	-.07	.78***	-.31***	-.28***	-.54***	-.46***	.67***	-.54***	(.91-.94)	-.38***
18. Work engagement	-.33***	.15**	-.39***	.40***	.48***	.52***	.75***	-.42***	.73***	-.60***	(.78-87)

Note. Between-level correlations (aggregated across the eight measurement occasions) are presented above the diagonal, within-level correlations are presented below the diagonal. Within-level correlations are standardized and were calculated one by one in Mplus software. [a] 0 = female, 1 = male; [b] 0 = resident, 1 = medical specialist; [c] 0 = other than fulltime, 1 = fulltime work; [d] 0 = no current contact, 1 = current contact with COVID patients; [e] 0 = 1-month version, 1 = 7-day version. Cronbach alphas are displayed on diagonal.
*p < .05, **p < .01. ***p < .001.

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Table 4.2
Frequencies of Intervention Involvement Across the Study Period

Type of intervention	Usefulness	Intervention use for each time point							
		T1	T2	T3	T4	T5	T6	T7	T8
1. Course/workshop	7.53 (1.04)	136 (36.0%)	35 (10.5%)	95 (27.4%)	92 (28.2%)	73 (22.7%)	37 (12.8%)	56 (20.8%)	49 (18.6%)
2. Online information/app	6.78 (1.51)	109 (28.8%)	47 (14.2%)	53 (15.3%)	57 (17.5%)	35 (10.9%)	26 (9%)	12 (4.5%)	13 (4.9%)
3. Organized individual colleague support	7.92 (1.25)	58 (15.3%)	43 (13.0%)	36 (10.4%)	24 (7.3%)	23 (7.1%)	16 (5.5%)	17 (6.3%)	14 (5.3%)
4. Organized supportive group meeting	7.46 (1.14)	127 (33.6%)	72 (21.7%)	73 (21.0%)	64 (19.6%)	61 (18.9%)	37 (12.8%)	32 (11.9%)	35 (13.3%)
5. Professional support	8.00 (1.31)	47 (12.5%)	33 (9.9%)	39 (11.2%)	23 (7.1%)	39 (12.1%)	23 (8.0%)	25 (9.3%)	28 (10.6%)

Note. Due to missing data, *N* varies from 378 to 263. % refers to the valid percentage (i.e., excluding missing data). Usefulness scores (scale 1-10; aggregated across measurements) refer to the mean with the standard deviation in brackets. Due to a technical error, participants ($n = 5$) indicated a grade of 0 for intervention type 2. These scores were recoded into the lowest grade, i.e., a grade of 1.

Table 4.3

Intercorrelations Among Key Study Variables and Intervention Use

Study variables	Intervention categories				
	1. Course / Workshop	2. Online information / app	3. Organized individual peer support	4. Organized group support	5. Professional support
1. Workload	.02 (-.03)	.19* (.01)	.12 (.02)	.08 (.04)	.15* (.03)
2. Managerial support	.17* (-.02)	.13 (-.03)	.19** (.09***)	.18** (.00)	-.06 (.01)
3. Peer support	.18* (-.00)	.14 (.03)	.07 (.02)	.15* (.03)	-.08 (.03)
4. Job control	.11 (-.03)	.06 (-.05*)	-.09 (.02)	.05 (-.05*)	-.16* (.02)
5. Positive feedback	.22** (-.01)	.17* (-.01)	-.01 (.06**)	.12 (-.02)	-.06 (.00)
6. Self-judgment	-.04 (-.02)	.06 (.02)	.14* (.08***)	.09 (-.01)	.29*** (.06**)
7. PsyCap	.16* (-.01)	.10 (-.01)	-.10 (-.01)	.03 (.01)	-.11 (-.02)
8. Exhaustion	-.05 (-.01)	.06 (.02)	.17** (.04)	.07 (-.01)	.15* (.05*)
9. Work engagement	.14 (.02)	.04 (-.01)	-.02 (-.01)	.00 (.03)	-.09 (-.02)

Note. Within-level correlations are presented in brackets. All correlations are standardized and were calculated in M*plus* software. To investigate the associations of interventions with the key study variables, mean intervention use was calculated by dividing the total number of interventions that participants used during the study (maximum of 8) by the number of surveys they had completed (maximum of 8). Because incomplete surveys would have distorted the calculation of the mean, we excluded these data points in the analyses. As a consequence, the number of observations included in the correlational analysis slightly deviates from the number of observations included in the multilevel analyses. PsyCap = psychological capital. Participation in interventions was indicated with 0 = no, 1 = yes.

*p < .05, **p < .01. ***p < .001.

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Table 4.4
Results of Growth Modeling for Exhaustion

Predictor variable	Model 1 exhaustion						Model 2 exhaustion						Model 3 exhaustion					
	Intercept			Slope			Intercept			Slope			Intercept			Slope		
	Est	SE	p	Est	SE	p	Est	SE	p	Est	SE	p	Est	SE	p	Est	SE	p
Control variables																		
Learning goal orientation	-.044	.052	.405	.027	.089	.760	-.043	.052	.417	.023	.089	.794	.012	.052	.448	-.040	.087	.893
Trait anxiety	.492	.050	.000	-.250	.091	.006	.486	.050	.000	-.208	.091	.023	-.197	.050	.000	.486	.090	.028
Anxiety COVID-19 infection	.273	.053	.000	.088	.091	.336	.280	.053	.000	.097	.091	.283	.104	.053	.000	.278	.090	.250
Age	-.055	.081	.500	.163	.134	.223	-.090	.079	.255	.139	.130	.286	.091	.079	.257	-.090	.129	.479
Job position	.062	.080	.433	-.143	.130	.271	.063	.079	.426	-.151	.129	.242	-.112	.079	.414	.064	.130	.390
Contact COVID-19 patients	.092	.053	.081	.033	.088	.705												
Version	.006	.053	.906	-.109	.091	.230												
Gender	-.074	.056	.185	-.090	.091	.322												
Fulltime work	.068	.055	.211	-.029	.091	.747												
Intervention variables																		
Professional support							-.131	.084	.117				-.130	.082	.112			
Workshop/course													-.132	.102	.196			
Information/app													.035	.105	.742			
Organized individual support													-.078	.098	.430			
Organized group support													.274	.100	.006			

Table 4.4 continued

Note. We report the standardized parameter estimates.

Model 1: intercept – slope covariation exhaustion: *estimate* = -0.181, *SE* = 0.115, *p* = .116; intercept – slope covariation engagement: *estimate* = -0.241, *SE* = 0.097, *p* = .013; intercept – intercept covariation: *estimate* -0.582, *SE* = 0.06, *p* < .001; slope – slope covariation: *estimate* = -0.643, *SE* = 0.122, *p* < .001; intercept exhaustion – slope engagement covariation: *estimate* = 0.079, *SE* = 0.119, *p* = .505; intercept engagement – slope exhaustion covariation: *estimate* = 0.172, *SE* = 0.103, *p* = .095.

Model 2: intercept exhaustion predicting prof. support: *estimate* = 0.104, *SE* = 0.104, *p* = .316; intercept engagement predicting prof. support: *estimate* = -0.031, *SE* = 0.092, *p* = .735; intercept – slope covariation exhaustion: *estimate* = -0.153, *SE* = 0.118, *p* = .193; intercept – slope covariation engagement: *estimate* = -0.235, *SE* = 0.098, *p* = .016; intercept – intercept covariation: *estimate* -0.554, *SE* = 0.060, *p* < .001; slope – slope covariation: *estimate* = -0.600, *SE* = 0.125, *p* < .001;intercept exhaustion – slope engagement covariation: *estimate* = 0.036, *SE* = 0.121, *p* = .768; intercept engagement – slope exhaustion covariation: *estimate* = 0.129, *SE* = 0.104, *p* = .213.

Model 3: intercept exhaustion predicting prof. support: *estimate* = 0.113, *SE* = 0.102, *p* = .269; workshop/course: *estimate* = -0.037, *SE* = 0.106, *p* = .723; information/app: *estimate* = -0.001, *SE* = 0.107, *p* = .991; organized individual support: *estimate* = 0.297, *SE* = 0.103, *p* = .004; organized group support: *estimate* = -0.071, *SE* = 0.108, *p* = .509; intercept engagement predicting prof. support: *estimate* = -0.023, *SE* = 0.091, *p* = .803; workshop/course: *estimate* = .139, *SE* = 0.093, *p* = .138; information/app: *estimate* = 0.078, *SE* = 0.095, *p* = .412; organized individual support: *estimate* = 0.250, *SE* = 0.091, *p* = .006; organized group support: *estimate* = 0.002, *SE* = 0.096, *p* = .979; intercept – slope covariation exhaustion: *estimate* = -0.155, *SE* = 0.122, *p* = .204; intercept – slope covariation engagement: *estimate* = -0.229, *SE* = 0.101, *p* = .024; intercept – intercept covariation: *estimate* -0.555, *SE* = 0.060, *p* < .001; slope – slope covariation: *estimate* = -0.628, *SE* = 0.128, *p* < .001; intercept exhaustion – slope engagement covariation: *estimate* = 0.033, *SE* = 0.124, *p* = .790; intercept engagement – slope exhaustion covariation: *estimate* = 0.155, *SE* = 0.107, *p* = .147.

Table 4.5
Results of Growth Modeling for Work Engagement

Predictor variable	Model 1 engagement						Model 2 engagement						Model 3 engagement					
	Intercept			Slope			Intercept			Slope			Intercept			Slope		
	Est	SE	p	Est	SE	p	Est	SE	p	Est	SE	p	Est	SE	p	Est	SE	p
Control variables																		
Learning goal orientation	.357	.048	.000	-.210	.084	.012	.363	.048	.000	-.214	.083	.010	.362	.048	.000	-.209	.084	.013
Trait anxiety	-.232	.053	.000	.126	.087	.148	-.247	.053	.000	.111	.088	.207	-.248	.053	.000	.114	.088	.192
Anxiety COVID-19 infection	-.193	.052	.000	-.170	.087	.050	-.196	.052	.000	-.173	.086	.045	-.197	.052	.000	-.173	.087	.047
Age	-.070	.079	.377	-.304	.128	.018	-.078	.077	.316	-.306	.124	.014	-.077	.078	.321	-.318	.127	.012
Job position	.166	.077	.032	.175	.125	.162	.163	.077	.034	.202	.123	.101	.163	.077	.034	.213	.126	.092
Contact COVID-19 patients	.029	.051	.566	-.112	.084	.179												
Version	.096	.051	.060	-.010	.088	.910												
Gender	.006	.054	.908	-.037	.088	.670												
Fulltime work	.085	.053	.110	-.068	.087	.430												
Intervention variables																		
Professional support										.171	.078	.029				.168	.078	.032
Workshop/course																-.075	.099	.449
Information/app																.056	.100	.574
Organized individual support																-.002	.091	.979
Organized group support																-.001	.094	.994

Table 4.5 continued

Note. We report the standardized parameter estimates.

Model 1: intercept – slope covariation exhaustion: *estimate* = -0.181, *SE* = 0.115, *p* = .116; intercept – slope covariation engagement: *estimate* = -0.241, *SE* = 0.097, *p* = .013; intercept – intercept covariation: *estimate* -0.582, *SE* = 0.06, *p* < .001; slope – slope covariation: *estimate* = -0.643, *SE* = 0.122, *p* < .001; intercept exhaustion – slope engagement covariation: *estimate* = 0.079, *SE* = 0.119, *p* = .505; intercept engagement – slope exhaustion covariation: *estimate* = 0.172, *SE* = 0.103, *p* = .095.

Model 2 intercept exhaustion predicting prof. support: *estimate* = 0.104, *SE* = 0.104, *p* = .316; intercept engagement predicting prof. support: *estimate* = -0.031, *SE* = 0.092, *p* = .735; intercept – slope covariation exhaustion: *estimate* = -0.153, *SE* = 0.118, *p* = .193; intercept – slope covariation engagement: *estimate* = -0.235, *SE* = 0.098, *p* = .016; intercept – intercept covariation: *estimate* -0.554, *SE* = 0.060, *p* < .001; slope – slope covariation: *estimate* = -0.600, *SE* = 0.125, *p* < .001; intercept exhaustion – slope engagement covariation: *estimate* = 0.036, *SE* = 0.121, *p* = .768; intercept engagement – slope exhaustion covariation: *estimate* = 0.129, *SE* = 0.104, *p* = .213.

Model 3: intercept exhaustion predicting prof. support: *estimate* = 0.113, *SE* = 0.102, *p* = .269; workshop/course: *estimate* = -0.037, *SE* = 0.106, *p* = .723; information/app: *estimate* = -0.001, *SE* = 0.107, *p* = .991; organized individual support: *estimate* = 0.297, *SE* = 0.103, *p* = .004; organized group support: *estimate* = -0.071, *SE* = 0.108, *p* = .509; intercept engagement predicting prof. support: *estimate* = -0.023, *SE* = 0.091, *p* = .803; workshop/course: *estimate* = 0.139, *SE* = 0.093, *p* = .138; information/app: *estimate* = 0.078, *SE* = 0.095, *p* = .412; organized individual support: *estimate* = 0.250, *SE* = 0.091, *p* = .006; organized group support: *estimate* = 0.002, *SE* = 0.096, *p* = .979; intercept – slope covariation exhaustion: *estimate* = -0.155, *SE* = 0.122, *p* = .204; intercept – slope covariation engagement: *estimate* = -0.229, *SE* = 0.101, *p* = .024; intercept – intercept covariation: *estimate* -0.555, *SE* = 0.060, *p* < .001; slope – slope covariation: *estimate* = -0.628, *SE* = 0.128, *p* < .001; intercept exhaustion – slope engagement covariation: *estimate* = 0.033, *SE* = 0.124, *p* = .790; intercept engagement – slope exhaustion covariation: *estimate* = 0.155, *SE* = 0.107, *p* = .147.

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CHAPTER FIVE

SIMPLY EFFECTIVE? THE DIFFERENTIAL EFFECTS OF SOLUTION-FOCUSED AND PROBLEM-FOCUSED COACHING QUESTIONS IN A SELF-COACHING WRITING EXERCISE

Abstract

Objectives

Coaching is a systematic and goal-oriented one-on-one intervention by a coach aimed to guide clients in their professional and personal development (Grant, 2003). Previous research on coaching has demonstrated effects on a number of positive outcomes, including well-being and performance, yet little is known about the processes that underlie these outcomes, such as the type of questions coaches use. Here, we focus on three different types of coaching questions, and aim to uncover their immediate and sustained effects for affect, self-efficacy, and goal-directed outcomes, using a between-subjects experiment.

Method

One hundred and eighty-three medical residents and PhD students from various medical centers and healthcare organizations in the Netherlands were recruited to participate in a self-coaching writing exercise, where they followed written instructions rather than interacting with a real coach. All participants were randomly allocated to one of three conditions: either one of two solution-focused coaching conditions (i.e., the success or miracle condition) or a problem-focused coaching condition. Self-report questionnaires were used to measure key outcomes of coaching, that is positive and negative affect, self-efficacy, goal orientation, action planning (i.e., quantity and quality), and goal attainment. Two follow-up measurements assessed if the effects of the self-coaching exercise led to problem-solving actions within an initial follow-up period of 14 days and a subsequent follow-up period of 10 days.

Results

Findings showed that participants experienced more positive affect, less negative affect, and higher approach goal orientation after the solution-focused coaching exercise compared to the problem-focused coaching exercise. In all conditions, goal attainment increased as a consequence of the self-coaching intervention.

Conclusions

Solution-focused coaching questions are superior to problem-focused questions in increasing people's immediate affective states and their goal-directed motivation. We discuss the implications of our findings for the science and practice of contemporary coaching.

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> *"Problem talk creates problems, solution talk creates solutions"*
> *(Steve de Shazer)*

In the past two decades, the field of psychology has largely shifted its focus from (curing) mental illness to (promoting) well-being. With that shift, a new field of research and practice has emerged, that of positive psychology. The field of positive psychology is, in essence, the study of positive human functioning or happiness as defined by the presence of positive emotions, engagement, and meaning (Seligman & Csikszentmihalyi, 2000). Instead of fixing what is broken, applied positive psychology highlights what is working well in people's lives and uncovers and amplifies people's individual strengths, hopes, and positive virtues. The theory of positive psychology, through its strength-based approach to human functioning, is the basis of coaching research and practice (Kauffman, 2006).

With growing attention to individual well-being and thriving, professional coaching has become a popular intervention at both the workplace and the private domain. Coaching can be defined as "a result-oriented, systematic process in which the coach facilitates the enhancement of life experience and goal attainment in the personal and/or professional lives of normal, non-clinical clients" (Grant, 2003, p. 254). Given the continuous need of employees to adapt to the changing nature of work and organizations—which can be demanding and a risk factor for well-being and health (George & Jones, 2001; Johnston, 2018; Van den Heuvel et al., 2013)—employees increasingly seek the support of a coach to help them deal with the many challenges that working life can present. With this uptake, coaching as a profession also continues to keep growing: The International Coach Federation, the most recognized governing body for coaches around the world, counts more than 40.000 members in 151 countries in 2021 (International Coach Federation, 2021), but this is a very conservative estimate of the number of people actually working as coaches. Research on the effects of coaching supports its popularity: Studies have repeatedly demonstrated the positive effects of coaching on both well-being (e.g., reducing stress and burnout) and performance outcomes

(e.g., goal attainment; Jones et al., 2016; McGonagle et al., 2020; Theeboom et al., 2014; Solms et al., 2021).

Although research on coaching has accelerated in the past years, there is still a lot that we do not know. First, relatively little is known about the coaching techniques and psychological mechanisms underlying positive coaching outcomes. Here, we aim to uncover these mechanisms by focusing on the effects of three different questioning techniques that coaches can use (Bozer & Jones, 2018; Fontes & Dello Russo, 2021; Jones et al., 2021). We employ a self-coaching intervention rather than a real-life coaching intervention to examine the effects of each questioning technique and isolate it from relational factors that might otherwise impact the outcomes of coaching. That is, in real-life coaching, coaches tend to use a blend of different questioning techniques, and relational factors such as similarity attraction (i.e., similarity between coach and client may increase liking for one another) may play a role in their effectiveness. Employing an experimental design with a self-coaching exercise allows us to eliminate such confounding, relational factors and uncover the unique effects of each coaching question on coaching outcomes and their underlying psychological mechanisms. Nevertheless, we note that self-coaching is different from real-life coaching, where a professional coach guides the coachee in a systematic and goal-oriented fashion to goal attainment and personal change. Second, the majority of experimental studies have focused on the immediate effects of coaching questions (Theeboom et al., 2014). Given that coaching is a temporary investment, it is important to investigate if coaching questions can foster goal-directed change (e.g., action planning) beyond such immediate effects. Here, we examine both the immediate effects of questioning techniques and their effects during a brief follow-up period. Third and finally, existing experimental research on the effectiveness of coaching—the method that supports drawing causal conclusions—has exclusively been conducted among undergraduates (e.g., Grant, 2012a; Grant & O'Connor, 2018; Theeboom et al., 2016). This is unfortunate, given that the majority of coaching takes place within an organizational context. It is thus crucial to conduct experimental research

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among working individuals and in a context in which coaching normally takes place. Because we use an experimental design in which we test different self-coaching techniques among medical professionals, this study combines the advantage of experimental control with higher ecological validity, allowing stronger generalization of findings to real-life coaching of medical professionals.

Problem-Focused and Solution-Focused Coaching

Questions are an integral part of any coaching conversation (Grant & O'Connor, 2010). Here, we distinguish between questioning techniques that have their roots in *problem-focused coaching* and questioning techniques that have their roots in *solution-focused coaching*. Problem-focused coaching approaches originate from more traditional, generally psychotherapy-inspired schools that tend to focus their questioning on the client's problem. Although positive psychology provides a solid theoretical and practical backbone to the science and practice of coaching (Kauffman, 2006; Seligman, 2007), numerous coaching practitioners are rooted in the therapeutic model, which concentrates on repairing damage rather than boosting strengths (Kauffman, 2006; Kauffman & Scouler, 2004). Consequently, these coaches tend to use questioning techniques that are aimed to understand (and eliminate) the client's problem (i.e., problem-focused questioning techniques).[9] These questions can, for instance, be focused on the origin of a problem: "How long has this been a problem? How did it start?" (Grant, 2003, p. 26). By analyzing the root cause of a problem and how it manifests in dysfunctional patterns and behavior, coach and client work towards a global understanding of the origin of the problem and its consequences (Lee, 2010). In contrast, coaches with a deep rootedness in strength-based approaches tend to focus on nurturing clients' positive skills and qualities. Consequently, and in line with

9   We are aware that the term problem-focused coaching is used primarily by advocates of solution-focused coaching. Real-life coaching often uses a blend of solution- and problem-focused techniques (Grant, 2012a) but since we are interested in the effects of specific coaching questions, we separate them in our study design.

the premises of positive psychology, they tend to use questioning techniques that activate existing resources and prioritize solution building over problem solving (i.e., solution-focused questioning techniques; O'Connell et al., 2013). These questions can, for instance, be focused on exploring previous solutions ("Can you think of a time when you managed a similar problem well? What did you do?") or exceptions to the problem ("Has there been a time where this problem was not present?").

Stemming from *Solution-Focused Brief Therapy* (De Shazer, 1988), solution-focused coaching represents a paradigm shift focusing on what is already working well in a client's life (O'Connell et al., 2013) rather than focusing predominantly on the problem and its origin. In practice, the problem that has brought the client to coaching in the first place will almost always be the starting point of any coach conversation and as such, problem-focused approaches play an important role, especially at the beginning of the coaching process. While problem-focused coaching addresses solutions relatively late in the process, in Solution-Focused Brief Therapy and coaching, solutions are developed relatively quickly by focusing on strategies and behavior that have been proven helpful instead of focusing on a client's dysfunctional behavior (De Shazer, 1988). By identifying occasions in a client's life where the problem could have occurred but did not (referred to as 'exception times'), coach and client can work towards solutions without spending too much time on the problem itself. Research in various populations (e.g., university students, patients, managers) has shown that solution-focused approaches correlate with well-being and promote goal pursuit (Grant, 2014; Green et al., 2006; Pakrosnis & Cepukiene, 2015; Zhang et al., 2018), a finding that has also been confirmed in a meta-analysis on coaching in organizational and educational settings (Theeboom et al., 2014).

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While problem-focused coaching centers around asking questions about the client's problem, solution-focused coaching can use different types of questions: The miracle question or success question are prototypical examples. The miracle question lets clients imagine a situation in which the problem

miraculously no longer exists (De Shazer & Dolan, 2012). This questioning technique uses mental imagery to stir the conversation away from the problem towards a desired situation where the problem is absent. Applying this technique can be an eye-opener for clients who tend to focus primarily on the struggles they encounter and consequently pave the way for change (De Shazer & Dolan, 2012). The success question lets clients think back to previous situations in which they have successfully managed a problem. This questioning technique is based on the assumption that people have solved plenty of problems in the course of their life and are, therefore, able to generate successful strategies to solve their current problems (De Shazer & Dolan, 2012). This idea strongly resembles Bandura's (1991) concept of self-efficacy: a person's belief in his or her capability to successfully perform a particular task. Such self-efficacy beliefs are strongly influenced by past experiences of success (i.e., mastery experiences). As such, the success question can make past mastery experiences salient to the client and increase their sense of competence.

Despite its strong roots in seminal theory (e.g., social cognitive theory; Bandura, 1991) and its frequent use in practice, the success question has not received much scientific attention. This is unfortunate because a deeper understanding of the mechanisms through which specific questioning techniques can improve client outcomes would not only advance theory in the field of coaching but would also allow practitioners to resort to coaching techniques that are tailored to and more effective for their clients (Grant, 2020). In this study, we will therefore examine the effects of the success question in addition to the miracle question and will compare these effects with those of the problem-focused question.

Theoretical Background and Hypotheses

In line with positive psychology theory and common definitions of coaching as a change process aimed at building personal strengths and attaining personal goals, here we focus on key variables relevant in the context of goal-directed self-regulation: affect, self-efficacy, goal orientation, goal pursuit, and problem-solving actions.

Question Focus and Affect

Research comparing problem-focused with solution-focused questioning paints a more positive picture in favor of the solution-focused approach (e.g., Braunstein & Grant, 2016; Theeboom et al., 2016). Specifically, solution-focused questions (as compared to problem-focused questions) may increase positive affective states (e.g., feeling energetic) and may decrease negative affective states (e.g., feeling anxious; Grant & 'O Connor, 2018; Theeboom et al., 2016). According to positive psychology theory (Seligman et al., 2005), when people are encouraged to think about a desired outcome in the future or past successes—rather than directing their attention to the problem—they will likely experience positive emotions (such as feeling energetic or calm) that accompany these thoughts. This idea is supported by regulatory focus theory (Higgins, 2002), proposing that goals aimed at achieving positive outcomes (rather than at avoiding negative outcomes) are linked to positive emotions (Idson et al., 2000). In contrast, goals aimed at avoiding or overcoming negative outcomes are linked to negative emotions. Hence, when people focus on potential solutions, they will experience positive emotions, whereas when they mainly focus on their problem, they will feel increased discomfort and negative emotions (Theeboom et al., 2016). Based on this theorizing, we generate our first hypothesis.

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> *Hypothesis 1:* Compared to problem-focused questioning, solution-focused questioning leads to (a) higher positive affect and (b) lower negative affect.

Question Focus and Self-Efficacy

Coaches often seek to increase their clients' self-efficacy to promote a sense of personal agency and goal attainment (Grant, 2012a). This idea is rooted in Bandura's social learning theory (1977) that posits that past experiences guide people's future actions and that people engage in actions that have proven useful in the past. In solution-focused coaching, self-efficacy is promoted by focusing on 'what is going well' instead of 'what is going wrong'. Under the tenet 'If it works, do more of it' therapists and coaches encourage clients to engage in activities that have been proven useful. Small steps in the right direction will likely spark further steps, gradually leading the client to feel 'better enough' to end therapy or coaching (De Shazer & Dolan, 2012, p. 2).

The miracle question is typically used by coaches to spark optimism of a hopeful future and break free from existing—often dysfunctional—cognitive patterns and beliefs (Braunstein & Grant, 2016; Grant & O'Connor, 2010, 2018). By encouraging the client to envision a world without the problem, people are reminded of their qualities and skills that have been overshadowed by the seeming incompetence to handle the problem successfully. Therefore, the miracle question (as opposed to a problem-focused coaching question) likely increases self-efficacy to solve a personal problem. Moreover, we expect that the solution-focused success question will result in even higher self-efficacy than the solution-focused miracle question because the success question instructs clients to think about previous mastery experiences, which—according to Bandura's social learning theory—should be particularly strongly related to self-efficacy (Bandura, 1982).

> *Hypothesis 2a:* Compared to problem-focused questioning, solution-focused questioning leads to higher self-efficacy.
>
> *Hypothesis 2b:* Compared to the solution-focused miracle question, the solution-focused success question leads to higher self-efficacy.

Question Focus and Goal Orientation

With goal pursuit lying at the heart of coaching interventions, coaches may seek to assist clients in formulating effective goals, that is, approach rather than avoidance goals (Elliot & Church, 1997; Elliot et al., 1997). Solution-focused questioning can help to achieve this as it emphasizes a desired outcome that one aims to achieve (i.e., an approach goal) rather than a negative outcome that one aims to avoid (i.e., an avoidance goal). This is in line with the self-regulation model by Carver and Scheier (1998) proposing that behavioral regulation with negative reference points (i.e., an undesired end state) is less fruitful than behavioral regulation with positive reference points (i.e., a desired end state) because the former fails to provide clients with a clear direction. Instead of focusing on the things that are going wrong, solution-focused coaching rather emphasizes behaviors that proved beneficial for the client during times of improvement (De Shazer & Dolan, 2012). Drawing on the hierarchical model of approach-avoidance motivation (Elliot, 2006) we argue that solution-focused coaching—due to its strong focus on positive outcomes and how to attain them—is inherently associated with an approach rather than avoidance orientation. Specifically, both the miracle and the success question draw attention to a desired outcome that either has "magically" come about (i.e., the miracle question) or has previously been achieved (i.e., the success question). As such, we hypothesize that the solution-focused coaching questions will stimulate approach goal orientation and inhibit avoidance goal orientation.

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> *Hypothesis 3:* Compared to problem-focused coaching, solution-focused coaching leads to (a) higher approach goal orientation and (b) lower avoidance goal orientation.

Question Focus and Goal Pursuit

Compared to problem-focused coaching, solution-focused coaching approaches are stronger future-focused and goal-directed (De Shazer & Dolan, 2012): Considerable time is spent on constructing solutions, presumably more than on analyzing the problem that brought a client to coaching in the

first place. Consequently, clients can make goal progress relatively quickly (Iveson, 2002). Drawing on hope theory—that emphasizes agency and pathway thinking as central to the process of goal attainment— (Snyder, 2002), we argue that solution-focused coaching activates clients' sense of agency (i.e., the belief in one's capacity to initiate and sustain actions or 'willpower') and goal-directed or 'pathway' thinking, which likely promotes goal-directed behavior (e.g., development of action plans) and goal attainment. Solution-focused as opposed to problem-focused coaching is expected to be superior in promoting goal progress (e.g., Grant & Gerrard, 2020; Grant & O'Connor, 2018). Based on this theorizing, research indeed found that participants who engaged in a solution-focused coaching exercise listed more action steps to solve a problem than participants in a problem-focused coaching exercise (Grant, 2012a). In line with hope theory and earlier empirical findings, we formulate the following hypothesis:

> *Hypothesis 4:* Compared to problem-focused questioning, solution-focused questioning will lead to (a) stronger increases in goal attainment and (b) more and higher quality action planning (i.e., number and quality of action steps) directly after the experimental coaching intervention.

Question Focus and Problem-Solving Actions

Although coaches can facilitate clients' goal pursuit through formulation of action plans, clients still need to translate their goals and plans into actual behavior (Theeboom et al., 2016). According to the theory of planned behavior (Ajzen, 1991) behavioral intentions (action plans to solve the problem) will promote actual problem-solving behaviors. We, therefore, also investigate the effects of problem-focused and solution-focused questioning on *reported* problem-solving actions and *actual* problem-solving actions within a brief follow-up period. Specifically, we include an unobtrusive behavioral measure that captures whether participants actually take action to try and solve their problem. Given the previously described benefits of solution-focused questioning on affective (e.g., positive affect), cognitive (e.g., self-efficacy),

and behavioral (i.e., action planning and goal attainment) outcomes, we expect that solution-focused (as opposed to problem-focused) questioning will have stronger effects on goal attainment and *reported* problem-solving actions within a follow-up period of 14 days, as well as on *actual* problem-solving actions within a subsequent follow-up period of 10 days.

> *Hypothesis 5:* Compared to problem-focused questioning, solution-focused questioning leads to (a) higher *reported* problem-solving actions (i.e., extent of performing action steps), (b) higher goal attainment, and (c) higher *actual* problem-solving actions during follow-up.

Materials and Methods

Participants and Design

Our sample comprised medical residents and MD/PhD students recruited from several medical centers and healthcare institutions throughout the Netherlands. In total, five medical centers as well as two umbrella training and education alliances that include more than 20 medical centers and several healthcare institutions were approached by the authors and shared the study invitation within their network of residents and MD/PhD students. Participants were invited by email to participate in a study on online coaching. Initially, a total number of 232 participants completed the self-coaching exercise that consisted of written instructions concerning a work-related problem.

In order to preclude any adverse effects of our manipulation on participants' well-being and in line with coaching operationalized as an intervention for a healthy, non-clinical population, participants were screened at the start of the study on the emotional exhaustion component of the UBOS scale (UBOS; Schaufeli et al., 1996; Theeboom et al., 2016). Because we predicted more positive effects in the solution-focused than in the problem-focused condition,

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participants who reached a cut-off point of severe exhaustion (cut-off = 4.62; Schaufeli & Van Dierendonck, 2000) were automatically led into one of the two solution-focused coaching conditions. Additionally, these participants were notified at the end of the questionnaire that they scored above average on the exhaustion scale and were advised to seek support from their occupational physician or manager. We excluded their data (n = 7) from our analyses. After applying a predetermined exclusion procedure (see Figure 1 for a CONSORT flowchart), our final sample comprised 183 medical residents and medical PhD students (159 residents, 145 females of which 61, 66, and 56 were assigned to the problem, miracle, and success condition, respectively). Their average age was 30.71 (*SD* = 3.30), ranging from 25 to 46 years.

The study consisted of an online self-coaching writing exercise and questionnaire (T1), a follow-up questionnaire (T2), and an unobtrusive behavioral measure (T3). The self-coaching writing exercise allowed us to test the effects of solution- and problem-focused coaching questions that were experimentally manipulated. Participants were randomly allocated to one of three conditions (problem-focused, solution-focused miracle, or solution-focused success). Including two different types of solution-focused coaching questions (i.e., miracle and success question) allowed us to compare their effects as well rather than merely contrasting solution-focused coaching with problem-focused coaching questions. While the follow-up questionnaire (T2) was used to measure the effects of the coaching exercise (i.e., reported problem-solving actions and goal attainment) during a brief follow-up period of 14 days, the hidden behavioral measure (T3) aimed to assess actual problem-solving actions.

Procedure and Manipulations

The study protocol was approved by the Ethics Review Board of the University of Amsterdam. Before starting the online coaching exercise (at T1), participants were informed about the study's goal and procedure. They were also informed

that all data would be handled confidentially, would not be shared with the organizations in which participants were employed, and that participation was completely voluntary. Finally, they read that the study consisted of a self-coaching exercise (T1) and a follow-up questionnaire (T2) they would receive 14 days later. See Figure 2 for details on the exclusion procedure at T2 and T3.

Manipulation: Self-Coaching Writing Exercise (T1)

Participants completed the informed consent form, filled in a self-generated identification code to allow matching the T1 and T2 data, provided demographical information (i.e., gender, age, nationality, job position [i.e., medical resident, medical PhD student] and medical specialty, previous experience with coaching and email address for follow-up contact and compensation in the form of an online voucher), and completed the exhaustion screening measure. Participants then started the self-coaching writing exercise. The exercises with the solution-focused miracle or problem-focused questions were based on previous research (Braunstein & Grant, 2016; Theeboom et al., 2016). The exercise with the solution-focused success question was added by the researchers and is based on Bandura's concepts of self-efficacy and mastery (Bandura, 1982; see Appendix 5.1 for a detailed description of the self-coaching exercises). As a first step, participants were asked to identify and describe a personal work-related problem that they would like to address during coaching. In order to guarantee a certain degree of standardization of the problems described, we asked participants to describe a problem that related to their job, career, or work-life balance that they would like to address in a coaching session. Furthermore, they were asked to report the extent to which the problem was causing discomfort (on a 10-point scale, from 1 [*no discomfort at all*] to 10 [*heavy discomfort*]), and how the problem influenced thoughts and feelings or interfered otherwise with their functioning at work or in their private life. Finally, they were asked to indicate on a scale from 1 (*solution not reached at all)* to 10 (*solution reached*) to what extent they currently had reached the solution to their problem. Hereafter, the manipulation started.

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In the problem condition, participants were asked to think back to a day where their problem had been strongly present. Hereafter, they were asked to describe the first thing they had noticed on that day, how they had behaved, thought, and felt in that situation, and how other people had noticed that their problem was strongly present.

In the miracle condition, participants were asked to imagine a situation in which their problem had magically disappeared overnight. They were then asked to describe what they would notice the next morning, how they would behave, think, and feel in that situation, and how other people would notice that the problem had disappeared.

In the success condition, participants were asked to think of a situation in the past in which they had experienced the same problem but had been able to manage it successfully. They were asked to describe the first thing they had noticed that day, how they behaved, thought, and felt in that situation, and how other people had noticed that they had successfully dealt with the problem. Figure 3 presents the experimental procedure as well as the corresponding measures. See Appendix 5.3 for information on additional measures.

At T1, participants filled out questionnaires to assess their positive and negative affect, self-efficacy, and goal orientation. Next, their own responses to the self-coaching exercise (i.e., what they had noticed, how they had felt, thought, and behaved) were presented to them and they were asked to list future action steps that would bring them closer to solving their problem. Hereafter, they were asked again about their goal attainment (i.e., how close they felt to the solution of their problem). Finally, participants answered the manipulation check questions and were thanked for their participation.

At T2, 14 days after completion of the coaching exercise, participants who had completed T1 and had provided their email address received the invitation to the follow-up survey by e-mail. Participants reported their problem-solving

actions (i.e., the extent to which participants had performed their action steps described at T1) and goal attainment. At T3, after completion of the T2 measures, they received an invitation to a website providing information on dealing with work-related stress, such as time management and mindfulness. Using a click-through measure, we assessed the number of visits during the upcoming 10 days as an unobtrusive behavioral indicator of participants' actual (objective) problem-solving actions.

Measures

Our measures were derived from validated scales and have been used in previous studies in the context of coaching, and beyond. Below, we report reliability indices of our measures, Cronbach's alpha, and McDonalds omega (McNeish, 2018).

Emotional Exhaustion (T1)

Participants' emotional exhaustion was measured with the emotional exhaustion subscale of the Dutch version of the Maslach Burnout Inventory adapted for human services such as healthcare (UBOS-C; Schaufeli & Van Dierendonck, 2000; see also Maslach & Jackson, 1986). The eight items were answered on a seven-point scale ranging from 1 (*never*) to 7 (*always*). An example item is: "Working with people all day is a heavy burden for me" (α = .86; ω = .86).

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Goal Attainment (T1)

Goal attainment, the extent to which participants had reached the solution to their problem, was measured with a 10-point scale ranging from 1 (*solution not obtained at all*) to 10 (*solution obtained*; see Grant, 2012a, Theeboom et al., 2016). Goal attainment was measured before and after the experimental manipulation. The following item was used: "On a scale from 1 to 10, to what extent have you at this point achieved the solution to this problem?"

Positive and Negative Affect (T1)

Participants' positive and negative affect were measured with the hedonic tone (e.g., "satisfied"; $\alpha = .89$; $\omega = .90$), energetic arousal (e.g., "active"; $\alpha = .82$; $\omega = .79$), and the tense arousal (e.g., "nervous"; $\alpha = .90$; $\omega = .90$) subscales (eight items each) of the UWIST Mood Adjective Checklist (UMACL; Matthews et al., 1990). Participants were asked to indicate on a 7-point scale ranging from 1 (*not applicable at all*) to 7 (*fully applicable)* to what extent these adjectives currently applied to them when thinking about the situation they had just described (i.e., the coaching manipulation).

Self-Efficacy (T1)

Self-efficacy was measured with the following four items that are based on the Core Self-Evaluations Scale and were adapted to fit the context of the study (CSES; Judge et al., 2004): (1) "I am confident that I can solve my problem"; (2) "If I try my best, I will be able to solve my problem"; (3) "I am full of doubts about my abilities to master my problem"; (4) "I am able to handle my problem well" ($\alpha = .70$; $\omega = .71$). The items were answered on a 5-point scale ranging from 1 (*completely disagree*) to 5 (*completely agree*).

Approach and Avoidance Goal Orientation (T1)

Approach and avoidance goal orientation were measured with three items each, that were based on the Achievement Goal Questionnaire (AGQ; Elliot & Murayama, 2008). We adapted the items to fit the context of the self-coaching exercise. The items were answered on a 7-point scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). Example items of approach and avoidance goal orientation, respectively, are: "I strive to solve my problem as soon as possible" ($\alpha = .74$; $\omega = .74$) and "I am going to focus on preventing the problem from getting worse" ($\alpha = .61$; $\omega = .62$).

Action Planning (T1)

Action planning was assessed by asking participants to describe the first steps they would take in the near future to achieve the situation they wished for (i.e., solution of the problem; Grant, 2012a). The following item was used: "Can you

describe what first small steps you will take in the near future to achieve the desired situation (solution of the problem)?" Fifteen text fields were provided for potential responses. We recorded the number and quality of action steps of each participant by means of four indicators: *specificity*, *uniqueness*, *behavior (i.e., action steps reflect behavior rather than cognitions)*, and *approach goal orientation*. In pairs of two, the authors conducted the coding of the quality indicators based on a coding scheme. See Appendix 5.2 for a detailed description of the quality criteria and the coding process and scheme.

Manipulation Check (T1)

With six items that described the nature of the coaching instructions people had received, we assessed whether the manipulation had been successful. Participants rated on a 7-point scale ranging from 1 (*not applicable at all*) to 7 (*fully applicable*) whether the statements were applicable to them. Example items of the problem, miracle, and success conditions, respectively, are: "In this study, I was asked to think about a situation where my problem was very present" ($\alpha = .71$), "In this study, I was asked to imagine a situation in which my problem suddenly disappeared" ($\alpha = .95$), and "In this study, I had to think about what I had done in the past to solve the problem" ($\alpha = .76$).

Problem-Solving Actions (T2)

Participants were shown the personal problem and the action steps they had described during the coaching exercise (at T1). They were asked to indicate to what extent they had performed these steps (on a scale ranging from 1 [*not at all*] to 7 [*completely*]) and how much effort they had spent to do so (on a scale from 1 [*not much*] to 7 [*much*]). Participants then could list additional action steps that had not been listed before. We used the following item: "For each step, indicate to what extent you have performed this step and how much effort you have put into taking this step."

Goal attainment (T2)

Participants indicated on a 10-point scale ranging from 1 (*solution not obtained at all*) to 10 (*solution obtained*) to what extent they had currently reached the

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solution to their previously described problem. We used the same measure as at T1.

Actual Problem-Solving Actions (T3)

Participants received an email with the link to a website providing information that could be useful for dealing with work-related problems (e.g., time management and mindfulness). As an indicator of objective (as opposed to self-reported) problem-solving actions, we used a click-through measure to assess if participants visited the website during a period of 10 days. The specific content displayed on the website can be requested from the first author.

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Figure 1
CONSORT Flowchart Depicting Screening and Exclusion Procedure at T1
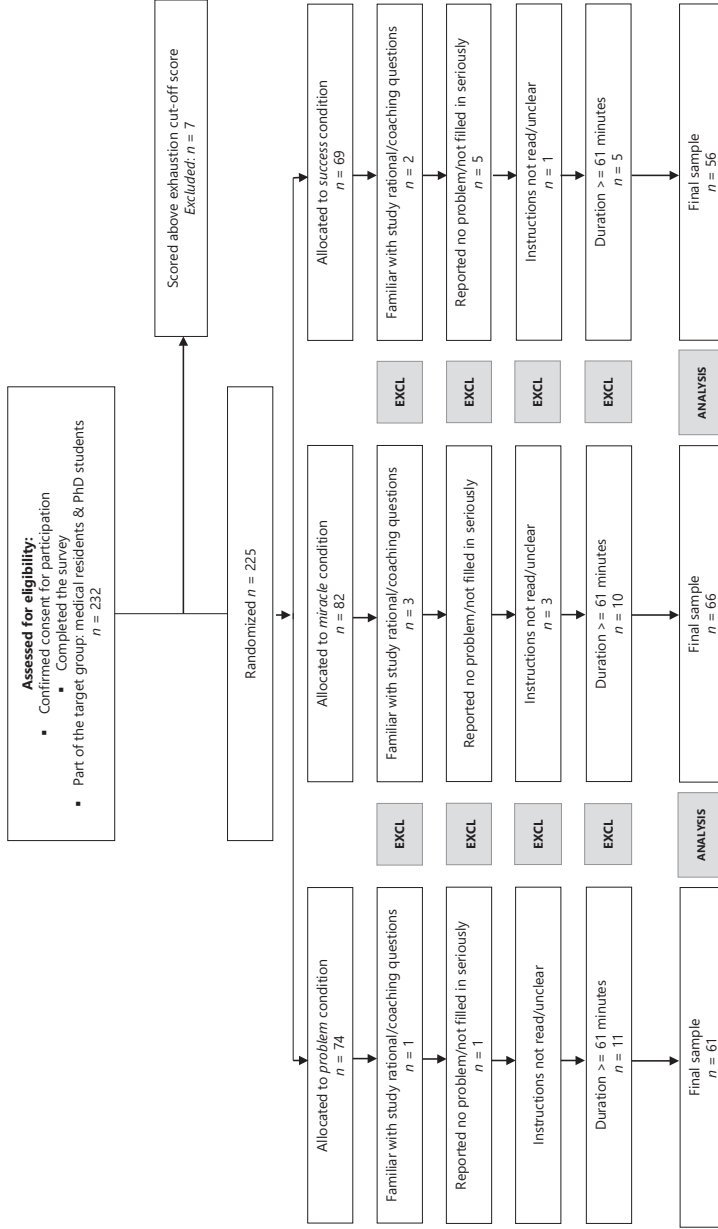
Note. EXCL refers to the exclusion of participants. Participants that spend 61 or more minutes on completing the experiment (i.e., extremes based on stem-and-leaf plot) were excluded, because the experimental design requires participants to complete the exercise at once.

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Figure 2
CONSORT Flowchart Depicting Screening and Exclusion Procedure for T2 and T3 Follow-Up
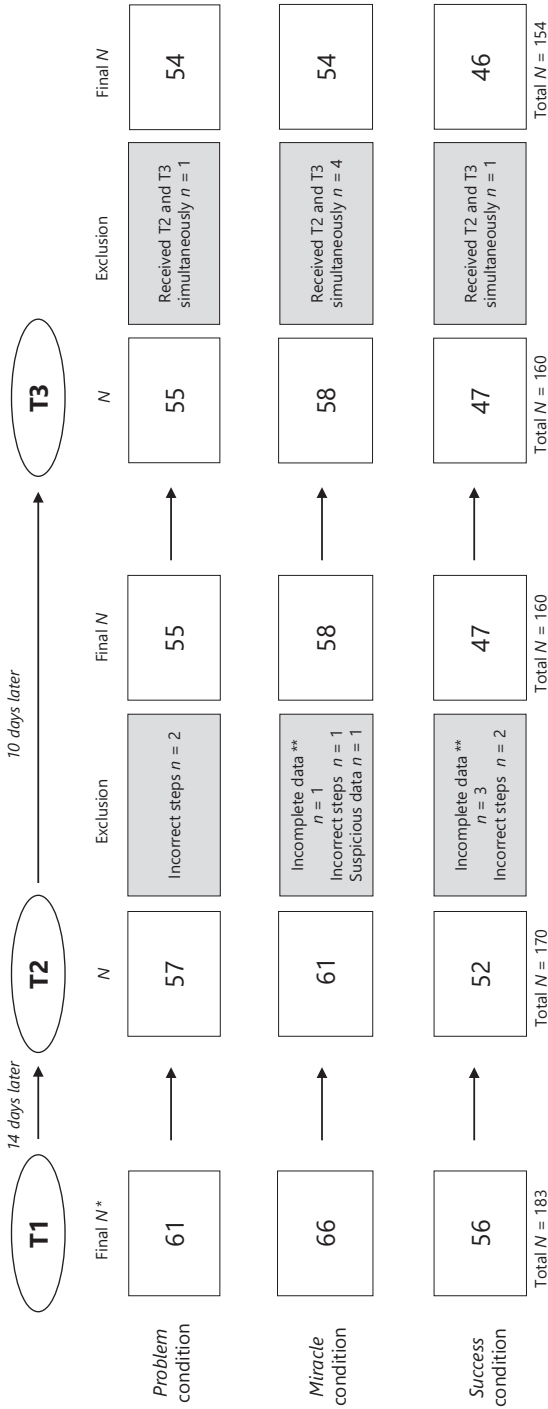
Note. The sample at T1 consisted of 183 participants allocated to one of the three experimental conditions. Of the 183 participants, 1 participant did not indicate their email address and thus did not receive the T2 survey. Of the remaining 182 participants, 170 participants (response rate: 92.9%) filled in the T2 survey. Overall, 10 participants were excluded as they did not complete the survey, indicated that the steps reported were not correct or showed suspicious data entry. The final sample at T2 consisted of 160 participants. The final T3 sample that was analyzed consisted of 154 participants. 6 participants were excluded as they received the link for the website (T3) and the T2 survey simultaneously and this could potentially distort the answers on the T2 survey. *For exclusion procedure at T1, see Figure 1. **Participants that didn't answer items on effort to perform action steps (but on extent) were included in the sample although these answers were missing.

Figure 3
Summary of Study Design

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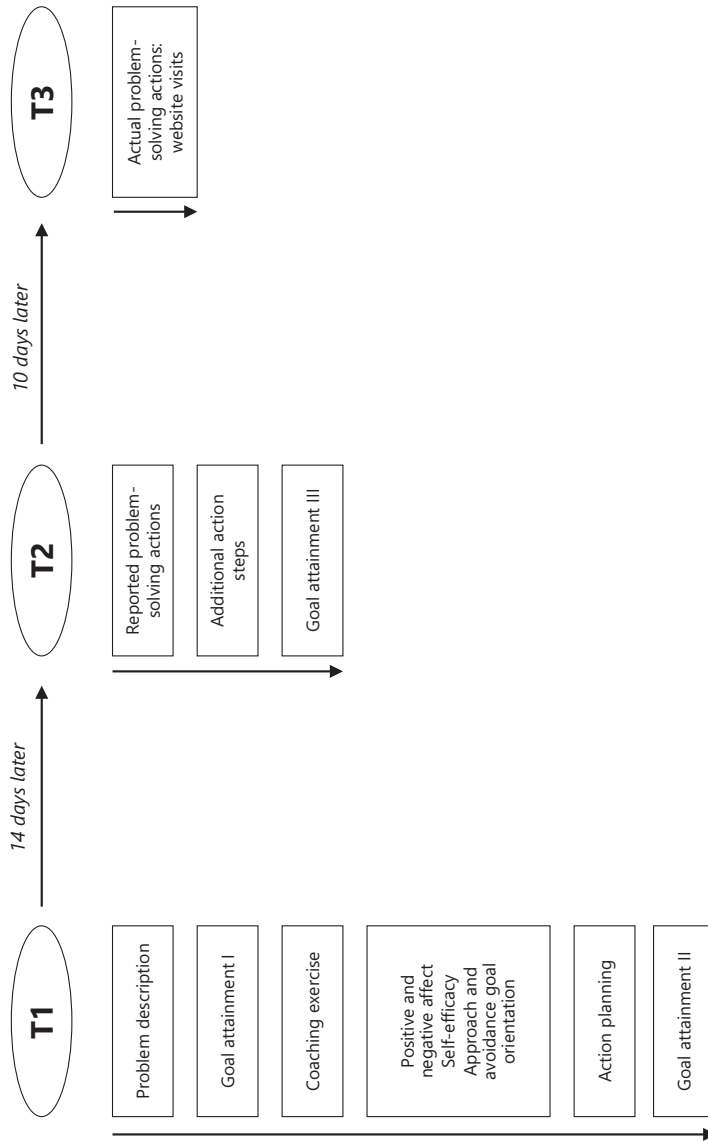
Results

Analytical Approach

Data were analyzed in SPSS (version 25) using analysis of variance (ANOVA) with condition as between-subjects factor. Significant main effects were followed up with planned contrasts between the problem-focused (coded as -2) and the two solution-focused conditions (coded as 1 each), and—for H2b—between the solution-focused miracle (coded as 1) and the solution-focused success condition (coded as -1). Table 1 shows the means and standard deviations of the key variables in all three conditions. Table 2 presents the correlations of the variables at T1. Table 3 displays a summary of the hypotheses and their results

Manipulation Check

Results showed that the experimental manipulation was successful. First, participants in the problem-focused condition scored higher on the degree to which the experiment had instructed them to imagine their problem being strongly present than participants in the solution-focused conditions ($F(2, 180) = 58.12$, $p < .001$, see Table 1). Second, participants in the miracle condition scored higher on the degree to which the experiment had instructed them to image a situation in which their problem had suddenly disappeared than participants in the other two conditions ($F(2, 180) = 479.45$, $p < .001$). Finally, participants in the success condition scored higher on the degree to which the experiment had instructed them to image what they had done before to solve the problem than participants in the other two conditions ($F(2, 180) = 63.99$, $p < .001$). Post-hoc testing confirmed that differences between conditions were significant (all ps $< .001$).

Table 1

Means and Standard Deviations of the Key Study Variables in all Three Conditions

Study Variables	Problem condition (n = 61)	Miracle condition (n = 66)	Success condition (n = 56)
	Mean (SD)	Mean (SD)	Mean (SD)
T1: Coaching exercise			
Manipulation check			
Problem items	6.07 (0.85)	3.30 (1.70)	4.54 (1.63)
Miracle items	1.44 (0.73)	6.37 (1.15)	1.71 (1.09)
Success items	3.64 (1.43)	3.00 (1.58)	5.81 (1.18)
PA: hedonic tone	3.85 (1.04)	4.64 (1.22)	4.84 (1.29)
PA: energetic arousal	4.24 (0.92)	4.81 (1.09)	4.83 (0.98)
NA: tense arousal	4.06 (1.15)	3.54 (1.32)	3.52 (1.19)
Self-efficacy	3.48 (0.70)	3.45 (0.73)	3.62 (0.66)
Approach goal orientation	4.77 (1.22)	5.13 (1.02)	5.31 (0.98)
Avoidance goal orientation	5.25 (1.24)	5.38 (1.12)	5.50 (1.02)
Goal attainment pre	4.59 (1.81)	4.77 (1.59)	4.89 (1.89)
Goal attainment post	5.74 (1.77)	5.59 (2.00)	6.14 (2.04)
Number action steps	3.80 (1.76)	3.89 (1.61)	3.79 (1.59)
Action steps: quality criteria [a]			
Specificity	1.62 (0.61)	1.72 (0.66)	1.45 (0.66)
Uniqueness	0.73 (0.24)	0.72 (0.25)	0.68 (0.23)
Behavior	0.77 (0.30)	0.75 (0.30)	0.80 (0.21)
Approach goal orientation	0.90 (0.19)	0.93 (0.14)	0.95 (0.13)

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Table 1 continued

Study Variables	Problem condition (n=61)	Miracle condition (n=66)	Success condition (n=56)
	Mean (SD)	Mean (SD)	Mean (SD)
T2: Follow-up questionnaire [b]			
Goal attainment	5.71 (1.92)	5.55 (1.74)	5.85 (1.61)
Extent action initiation	3.75 (1.36)	3.72 (1.35)	3.73 (1.34)
Effort action initiation	3.66 (1.74)	3.47 (1.26)	3.11 (1.20)
T3: Behavioral measure [c]			
Website visit in % [d]	48.10	57.40	58.70

Note. PA = positive affect, NA = negative affect; Goal attainment pre = before the experimental instructions; Goal attainment post = after the experimental instructions.

[a] Based on $n = 58$, $n = 66$, $n = 55$ for problem condition, miracle condition, and success condition, respectively.

[b] Based on $n = 55$, $n = 58$, $n = 47$ for problem condition, miracle condition, and success condition, respectively, for the *goal attainment* measure; $n = 53$, $n = 58$, $n = 46$ for problem condition, miracle condition, and success condition, respectively, for the *extent* measure; $n = 45$, $n = 48$, $n = 38$ for problem condition, miracle condition, and success condition, respectively, for the *effort* measure.

[c] Based on $n = 54$, $n = 54$, $n = 46$ for problem condition, miracle condition, and success condition, respectively.

[d] Reflects the percentage of participants visiting the website once or more.

Table 2

Means, Standard Variations, Intercorrelations, and Reliabilities of the Study Variables Across the Three Conditions at T1

	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. PA: hedonic tone	4.44	1.25	(.89)												
2. PA: energetic arousal	4.63	1.03	.71**	(.82)											
3. NA: tense arousal	3.71	1.24	-.68**	-.63**	(.90)										
4. Self-efficacy	3.51	0.70	.30**	.29**	-.27**	(.70)									
5. Approach goal orientation	5.07	1.10	.18*	.16*	-.15*	.35**	(.74)								
6. Avoidance goal orientation	5.37	1.13	-.00	-.00	.09	.10	.38**	(.61)							
7. Goal attainment pre	4.75	1.75	.23**	.23**	-.23**	.46**	.11	.03	(-)						
8. Goal attainment post	5.81	1.94	.19*	.12	-.17*	.54**	.16*	.02	.68**	(-)					
9. Number action steps	3.83	1.65	-.02	-.02	.16*	-.04	-.08	-.06	.03	.08	(-)				
Action steps: quality criteria															
10. Specificity	1.61	0.65	.02	.03	.03	.09	-.03	-.01	-.02	.07	.13	(-)			
11. Uniqueness	0.71	0.24	.06	.03	-.11	.06	.14	-.11	.07	.03	-.26**	-.02	(-)		
12. Behavior	0.77	0.28	-.08	-.14	.09	-.02	-.01	-.06	.02	-.02	.03	.16*	-.07	(-)	
13. Approach goal orientation	0.93	0.16	-.00	-.04	.05	.05	.06	-.06	-.06	.03	.10	.14	-.08	.28**	(-)

Note. $N = 183$ for variables 1 to 9. $N = 179$ for variables 10 to 13. Cronbach's alpha reliability indices are displayed on the diagonal between brackets.
* $p < .05$. ** $p < .01$

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Table 3
Summary of Hypotheses and Results

Hypothesis	Description	Result
H1a	Compared to problem-focused questioning, solution-focused questioning leads to higher positive affect.	*Supported*
H1b	Compared to problem-focused questioning, solution-focused questioning leads to lower negative affect.	*Supported*
H2a	Compared to problem-focused questioning, solution-focused questioning leads to higher self-efficacy.	*Not supported*
H2b	Compared to the solution-focused miracle question, the solution-focused success question leads to higher self-efficacy.	*Not supported*
H3a	Compared to problem-focused coaching, solution-focused coaching leads to higher approach goal orientation.	*Supported*
H3b	Compared to problem-focused coaching, solution-focused coaching leads to lower avoidance goal orientation.	*Not supported*
H4a	Compared to problem-focused questioning, solution-focused questioning will lead to stronger increases in goal attainment.	*Not supported*
H4b	Compared to problem-focused questioning, solution-focused questioning will lead to more and higher quality action planning (i.e., number and quality of action steps) directly after the experimental coaching intervention.	*Not supported*
H5a	Compared to problem-focused questioning, solution-focused questioning leads to higher *reported* problem-solving actions (i.e., extent of performing action steps) during follow-up.	*Not supported*
H5b	Compared to problem-focused questioning, solution-focused questioning leads to higher goal attainment during follow-up.	*Not supported*
H5c	Compared to problem-focused questioning, solution-focused questioning leads to higher *actual* problem-solving actions during follow-up.	*Not supported*

Note. See the main text for a description of the statistical results.

Hypothesis Testing

H1a predicted that the two solution-focused conditions (miracle and success) would elicit higher positive affect (i.e., hedonic tone, energetic arousal) than the problem-focused condition. Results yielded a significant main effect of condition for hedonic tone, $F(2, 180) = 11.85$, $p < .001$, $\eta p2 = 0.12$: Participants in the solution-focused conditions reported significantly higher hedonic tone

than participants in the problem-focused condition, $t(180) = 4.81$, $p < .001$. Similarly, results showed a significant main effect of condition for energetic arousal, $F(2, 180) = 6.81$, $p = 0.001$, $\eta p2 = 0.07$: Participants in the solution-focused conditions reported significantly higher energetic arousal than participants in the problem-focused condition, $t(180) = 3.69$, $p < .001$. Thus, H1a was supported.

H1b predicted that the two solution-focused conditions would elicit lower negative affect (i.e., tense arousal) than the problem-focused condition. Results showed a significant main effect of condition for tense arousal, $F(2, 180) = 3.78$, $p = .025$, $\eta p2 = 0.04$: Participants in the solution-focused conditions reported significantly lower tense arousal than participants in the problem-focused condition, $t(180) = -2.75$, $p = .007$. Thus, H1b was supported.

H2a predicted that the two solution-focused conditions would elicit higher self-efficacy than the problem-focused condition and H2b predicted that the success condition would elicit higher self-efficacy than the miracle condition. These hypotheses were not supported, $F(2, 180) = 1.00$, $p = .368$, $\eta p2 = 0.01$.

H3a predicted that the two solution-focused conditions would elicit higher approach goal orientation than the problem-focused condition. Results showed a significant main effect of condition for approach goal orientation, $F(2, 180) = 3.83$, $p = .024$, $\eta p2 = 0.04$: Participants in the solution-focused conditions reported significantly higher approach goal orientation than participants in the problem-focused condition, $t(180) = 2.65$, $p = .009$. Thus, H3a was supported. H3b predicted that the two solution-focused conditions would elicit lower avoidance goal orientation than the problem-focused condition, but was not supported, $F(2, 180) = 0.71$, $p = .494$, $\eta p2 = 0.01$.

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H4a predicted that the two solution-focused conditions would yield a stronger increase in participants' goal attainment after the coaching exercise than the problem-focused condition. Repeated measures analyses with time as within-subject variable and condition as between-subjects variable revealed a

significant main effect of time, $F(1, 180) = 95.63$, $p < .001$, $\eta p2 = 0.35$. In all three conditions, participants reported higher goal attainment after the self-coaching exercise than before, all $ps < .001$. The time x condition interaction was not significant, $F(2, 180) = 1.45$, $p = .237$, $\eta p2 = 0.02$, indicating that participants' increase in goal attainment did not differ between conditions. Results furthermore showed that there were no differences between conditions in participants' goal attainment at the start of the manipulation nor in the severity of the problem they had described, both $ps > .05$. Thus, H4a was not supported.

H4b predicted that the two solution-focused conditions would lead to more and higher-quality action planning than the problem-focused condition. The average number of action steps was the same in all conditions, $F(2, 180) = 0.08$, $p = .926$, $\eta p2 = 0.01$[10] and there was no difference between conditions for any of the four quality indicators (*specificity*: $F(2, 176) = 2.63$, $p = .075$, $\eta p2 = 0.03$; *uniqueness*: $F(2, 176) = 0.69$, $p = .505$, $\eta p2 = 0.01$; *behavior*: $F(2, 176) = 0.59$, $p = .557$, $\eta p2 = 0.01$; *approach goal orientation*: $F(2, 176) = 1.18$, $p = .309$, $\eta p2 = 0.01$). Thus, H4b was not supported.

H5a predicted that the two solution-focused conditions would lead to higher *reported* problem-solving actions within the period of 14 days after the experimental coaching intervention than the problem-focused condition. Results showed no differences between conditions in formulated action steps, $F(2, 154) = 0.01$, $p = .992$, $\eta p2 = 0.00$, nor in the amount of effort spent on performing those action steps, $F(2, 128) = 1.53$, $p = .221$, $\eta p2 = 0.02$. Additionally, a Pearson Chi-Square test showed that the proportion of participants who reported additional action steps ($n = 22$; 13.8%) did not differ as a function of condition $X^2 (2, N = 160) = 3.96$, $p = .138$. Thus, H5a was not supported. H5b predicted that participants in the two solution-focused conditions would report higher goal attainment than participants in the problem-focused condition. We found no support for this hypothesis, $F(2, 157) = .375$, $p = .688$, $\eta p2 = 0.01$.

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10   Log-transformation of the data showed comparable results.

H5c predicted that participants in the two solution-focused conditions would show higher *actual* problem-solving actions (i.e., website visits). We found no support for this hypothesis: A Pearson Chi-Square test indicated that participants from all three conditions[11] visited the website equally, X^2 (2, N = 154) = 1.39, p =.499.

Discussion

Despite the popularity of coaching for increasing well-being and thriving at both the workplace and the private domain, research has lacked behind in uncovering the mechanisms behind coaching effectiveness. Specifically, only little is known about the effectiveness of specific type of coaching questions, and it has remained unclear if the positive effects of such questions can be sustained outside of coaching sessions. The current study, therefore, examined the immediate effects of solution-focused and problem-focused coaching techniques in an experimental setting and investigated if these questions led to goal-directed changes during a brief follow-up period of 14 days. We showed that when implemented in a self-coaching writing exercise, solution-focused questioning—a popular approach to the practice of coaching—fosters affective self-regulation relatively more than problem-focused questioning. That is, solution-focused questioning promotes positive emotions, hampers negative emotions, and increases people's motivation to solve their problem (i.e., approach goal motivation). Yet, solution-focused questioning was not more effective than problem-focused questioning in reducing avoidance goal orientation or in promoting self-efficacy, action planning, problem solving, and goal attainment. In fact, both solution- and problem-focused questioning increased perceptions of goal attainment right after the writing exercise and after a period of 14 days. Below, we will discuss our findings and their implications in more detail.

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11   For 9 participants, it was not possible to retrieve if they had visited the website within the set period of 10 days. Because exclusion of these participants did not lead to changes in the results, we included their data in the final analyses.

Our results show that thinking about solutions rather than problems makes people not only feel good but also motivates them to strive for gains while keeping an eye on potential losses. That is, solution-focused questioning stimulated approach motivation but did not simultaneously inhibit avoidance motivation. A possible explanation for this finding might be that approach and avoidance motivation are relatively independent concepts (Elliot & Covington, 2001), and are therefore influenced through different systems. It might also be possible that investing in solutions for complex problems—that often are systemic and not entirely within one's control—is only adaptive when the problem will not get worse. In that case, adopting a prevention strategy (i.e., concerned with assuring safety and avoiding negative outcomes) can provide some degree of control (Higgins, 1997).

Contrary to our expectations and earlier empirical findings, we did not find that solution-focused questioning was more effective than problem-focused questioning in increasing people's self-efficacy beliefs, nor did we find any differences between the miracle and the success question in that regard. This is surprising, given that previous success experiences are deemed the most important source of self-efficacy (Bandura, 1977). We see two explanations for this unexpected finding. First, it is possible that the success experiences made salient during the coaching exercise were too broad to be a credible source for solving one's current problem. While mastery experiences in one domain can lead to spill-over effects to other domains, meaning that previous successes and associated positive experiences for example at work may boost motivation and positive affect to approach problems in private life, this is only the case if the same skills are required (e.g., general self-management strategies, Bandura, 2006). The skills that participants recalled during the coaching exercise may thus not have fully matched the skills needed to solve their current problem. It is particularly important for solution-focused coaches to not blindly focus on clients' strengths but to enable clients to transfer the right prior experienced skills to the current problem. Second, the problems that participants expressed were complex and at least partly contextual (see Appendix 5.4), which may mean that participants may have had situational

restrictions in mind when reflecting on their ability to solve the problem. Indeed, Figure 1 shows moderate self-efficacy beliefs and relatively low variance among participants in all three conditions.

Another unexpected finding was that problem-focused questioning was equally successful as solution-focused questioning in promoting goal attainment (i.e., how close people felt to solving their problem). Interestingly, this was still evident in all groups 14 days later. Although ruminating on problems can be damaging to clients' immediate affective states, taking time to reflect on one's problem may still feel like progress. According to the Transtheoretical Model of Change (Prochaska et al., 2015), people need to become aware of their problem, its causes, and consequences, before they are ready to act. Although the awareness of a problem can be uncomfortable (reduced positive affect – a finding we also see in our study), it is a crucial first step on the road to change and may facilitate rather than impede problem-solving actions when one stops digging into the problem in time.

Lastly, the results showed no differences between problem-focused and solution-focused questioning with regard to people's immediate action planning (i.e., number and quality of action steps), and their *reported* and *actual* problem-solving actions. In other words, thinking about solutions rather than problems did not make people actually *do* more to solve their problem. Our self-coaching writing exercise, in which participants were asked to describe a problem and reflect on it, may have been a push to start acting on the problem, irrespective of the experimental condition they were in. Thus, raising the salience of a problem may already trigger action planning and subsequent actions. Alternatively, the effects of problem-focused and solution-focused questioning techniques may outweigh each other in promoting or hampering action taking. While problem-focused questioning may cause deep reflection but also deactivating negative moods such as sadness and weariness (see Kreemers et al., 2020), solution-focused questioning may cause divergent thinking but also unrealistic fantasies that hinder the planning of concrete actions. Unlike concrete goals, positive

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fantasies lack a clear commitment to behavior (Oettingen, 2012). When indulging in positive thoughts, one can easily forget that this positive future hasn't been realized yet, which ultimately hinders goal striving and pursuit.

Theoretical Implications

The results of the present study provide a better understanding of the effects of questioning techniques in coaching and advance the literature in several ways. First, we answered to the call for a broader understanding of the psychological mechanisms that render positive coaching outcomes (Bachkirova & Kauffman, 2009). We shed light on the most essential tool that coaches have: asking questions. We showed that solution-focused questions are more effective than problem-focused questions when the goal of coaching is to make people feel good and to help people strive towards solving their problem (rather than preventing it from getting worse). For factors deemed essential for goal-directed self-regulation, the type of questioning made no difference.

Second, by examining the effects of questioning techniques on participants' problem-solving actions during a brief follow-up period, we uncovered their differential potential to alter behavior – the ultimate goal for many clients and their coaches. Specifically, we showed that solution-focused and problem-focused questioning did not lead to different behavioral outcomes during this period. Thus, although a strength-based approach in coaching seems particularly useful in stages in the coaching process where clients get lost in complex rumination and feelings of despair, this approach may be insufficient for sustaining behavioral change. More theory development and research are needed to better understand which interventions have which effects in the different temporal stages of coaching (see also Theeboom et al., 2017).

Finally, while prior research with university students showed that individuals benefited more from solution-focused than problem-focused questioning,

this finding was only partly replicated in our study with medical residents. This can be explained by the differences in samples: The type of problems that medical residents face in their job may fundamentally differ from those of students (e.g., study-related stress, Theeboom et al., 2016) in magnitude and complexity. First, the problems of employees and students may differ in *magnitude*. Theeboom and colleagues (2016) speculated that students' problems might not be pressing enough. For example, students were instructed to think about problems that were "frustrating for them" or were posing a "dilemma (...) where [they] feel caught between two or more possible courses of action" (e.g., Grant & Gerrard, 2020, p. 7). These types of problems were probably less severe than the problems mentioned by the healthcare workers in our sample. Second, the problems of employees and students may differ in *complexity.* Healthcare workers are part of large organizational systems in which they can have limited autonomy and control in their work. The work-related problems they face may often involve structural organizational factors (hindrance stressors) and significant others (e.g., colleagues, supervisors, or patients), which can significantly impact their perception of behavioral control, motivation, and options for problem-solving actions (Yang & Li, 2021). At the same time, the job demands (e.g., high workload, emotional demands) faced by the residents in this study might at least partly overlap with the experience of employees from relevant other settings (e.g., education). Consequently, we expect the findings to be generalizable across other professions outside of healthcare. All in all, it is possible that both the severity and complexity of the problems that coaching clients aim to solve influence the effectiveness of coaching questions for outcomes such as self-efficacy, goal attainment, and action planning and behavior. Therefore, as experimental studies encompass only a one-time and short (although controlled) intervention, future research could further improve its ecological validity by examining the effects of coaching questioning techniques in real coaching sessions. After all, coaching is a process.

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Practical Implications

Asking (the right) questions is an essential part of coaching. Our results show that not all types of questions are equally effective. Coaching questions that convey a positive outcome make the client feel good and motivate them to pursue their goals whereas 'problem talk' goes along with unpleasant feelings. In coaching practice, it would be neither desirable nor constructive to eliminate the problem from the coaching conversation altogether. However, if coaches—in a specific stage of the coaching process—aim to reinforce positive feelings and inspire optimism and hope for the future, they might do well to ask solution-focused questions. This may help clients to temporarily detach from their problem and develop a different and broader view on their situation.

Second, our results suggest that feeling good is a 'nice-to-have' rather than a 'must-have' for clients to pursue and achieve their goals: With positive outcomes in mind, people feel better in the short run, but these immediate affective reactions may not translate into goal-directed behaviors in the long run. Thus, asking solution-focused questions is not necessarily helpful in every stage of the coaching process. Given that coaching clients enter a coaching session with a description of what brought them to seek support in the first place (the preparatory contemplation stage of the coaching process), focusing on the problem at hand often is the logical first step. Especially when clients want to talk about their problems—which can be a cathartic experience—coaches should meet this need and not counter it with a rigid focus on solutions (Theeboom et al., 2016). Coaching is typically a blend of solution-focused and problem-focused techniques (Grant, 2012a), and not one or the other.

Finally, we recognize that effective questioning is only one pillar of successful coaching conversations. While skillfully asked questions can fundamentally set the tone of a coaching conversation by provoking thinking and self-awareness, the ultimate goal of coaching is client development and change. Therefore, coaches need to assist their clients in setting concrete and attainable goals

and turning intentions into actions – one of the biggest challenges for many clients.

Limitations and Future Research

Our study is not without limitations. First, the experimental design of our study did not allow us to capture the coaching process in all its complexity. However, it afforded experimental control by which we could compare the pure effects of different questioning techniques unaffected by relational (and other) factors that influence coaching outcomes in real-life. It is important to note that participants engaged in a short, online self-coaching exercise rather than a real coaching session with a professional coach. Real-life coaching is a joint and complex behavioral change process together with a professional that is different in many ways from self-coaching where such a professional is absent. While our design allowed us to disentangle the effects of coaching questions from other factors that play a role during coaching, a necessary next step is to investigate and extend the current findings using more ecologically valid procedures. Having said this, we are confident that our participants took the online exercise seriously as became clear from their serious and extensive responses to the open questions. Additionally, given that coaches regularly use (written) homework exercises for their clients between sessions, our results stress the (potential) benefits of such practice.

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Second, we realize that the distinction between solution- and problem-focused questioning is in part artificial and that real-life coaching is a mixture of many different approaches—of which solution- and problem-focused coaching are merely two—rather than the strict following of one single approach. Yet, disentangling the effects of both coaching approaches, can inform coaching practitioners of the unique effects that different types of questions may have on their clients.

We suggest some promising directions for future research. Based on the finding that a short self-coaching writing exercise could already increase perceptions of goal-directed change over time, it would be interesting to explore to what extent these perceptions are related to concrete behaviors (e.g., action planning and execution). Given that coaching tends to be an expensive enterprise, shortcuts to goal attainment could allow clients with fewer financial resources to benefit from coaching as well. Finally, to gain an in-depth understanding of what happens in and leads to successful coaching, extensive process studies are needed that combine coach and client perspectives and ultimately relate them to coaching outcomes. Such insights into the process of coaching will not only advance the theory of coaching but will also inform coaching practice in important ways. If coaching as a profession is seeking to move beyond an 'anyone can coach'- approach, it is important to know which (trained) coaching skills—including question techniques—are essential in which stage of the coaching process for attaining coaching goals.

Conclusion

In this study, we compared the effectiveness of solution-focused and problem-focused questions in driving positive outcomes of coaching. Our study shows that thinking about solutions rather than problems during a self-coaching writing exercise increases both people's immediate affective states and their goal-directed motivation. Both approaches, however, are equally effective for immediate action planning and execution during a brief follow-up period. Further research is needed that examines the variety and effectiveness of coaching questions in different stages of the coaching process.

Appendix

Simply effective? The differential effects of solution-focused and problem-focused coaching questions in a self-coaching writing exercise

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5.1 Self-Coaching Writing Exercise

Participants in all three conditions took part in an online self-coaching writing exercise. First, in all three conditions, participants answered the questions in the general instruction (see Table 5.1). Then, participants answered either solution-focused or problem-focused coaching questions, depending on the condition to which they had been assigned. Table 5.2 displays the instructions that followed the general instructions in the experimental conditions.

Table 5.1

General Instruction

1.	*This is an important part of the study. Please take a moment to think about this.* *First, we would like to ask you to describe the problem in about 50-100 words answering the questions below.* *You can formulate your answers in the indicated text fields below each question.* What is the problem?
2.	On a scale from 1-10, to what extent is the problem causing discomfort (1 = *no discomfort at all*, 10 = *heavy discomfort*)?
3.	In what ways are you affected by the problem? Think for example of feelings, or thoughts that arise in connection with the problem, but also how the problem might affect your functioning at work or in your private life.
4.	On a scale from 1 to 10, to what extent have you currently reached the solution to this problem? You can give your answer by moving the slider below (1 = *solution not reached at all*, 10 = *solution reached*)

Note. To answer question 3, participants were asked to use approximately 50 words. For all open questions (i.e., question 1 and 3) participants were asked to formulate their answers in text fields presented below each question.

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Table 5.2

Instructions Per Condition

Problem-Focused Questions

1. *Now comes the most important part of the study. Take a moment to think about the following:*
   Think of a situation in the past where your problem was strongly present.
2. Thinking back to that day when your problem was strongly present, what is the first thing that you notice?
3. How did you behave in this situation in the past where the problem was strongly present?
4. What thoughts did you have in this situation in the past where the problem was strongly present?
5. How did you feel in this situation in the past where the problem was strongly present?
6. How did others notice that the problem was strongly present in this situation in the past?

Solution-Focused Miracle Questions

1. *Now comes the most important part of the study. Take a moment to think about the following:*
   Imagine that tonight you go home and go to sleep. At night, however, a miracle happens. You have no idea how, but the next day when you get up you notice that that day your problem is no longer or barely present, and your desired situation has already come about. As the day progresses, the latter becomes more and more evident.
2. What is the first thing you notice when you wake up?
3. How do you behave in this situation where the problem has suddenly disappeared?
4. What thoughts do you have in this desired situation where the problem is suddenly no longer there?
5. How do you feel in this desired situation where the problem has just disappeared?
6. How do others notice that the desired situation has come about because the problem is no longer present?

Solution-Focused Success Questions

1. *Now comes the most important part of the study. Take a moment to think about the following:*
   Think of a situation in the past where you ran into the problem, but where you managed to (nearly) solve the problem.
2. Thinking back to that day when you managed to (nearly) solve your problem, what is the first thing that you notice?
3. How did you behave in this situation in the past when you managed to (nearly) solve the problem yourself?
4. What thoughts did you have in this situation in the past where you managed to (nearly) solve the problem yourself?
5. How did you feel in this situation in the past where you managed to (nearly) solve the problem yourself?
6. In this situation in the past, how did others notice that you had (nearly) solved the problem?

Note. To answer questions 2 to 6, participants were asked to use approximately 50 words. For all open questions (i.e., question 2 to 6) participants were asked to formulate their answers in text fields presented below each question.

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5.2 Action Planning at T1: Description of the Quality Criteria and the Coding Process

We recorded the number and quality of action steps of each participant. Some participants described action steps that were largely the same, such as "deciding what tasks are my priority and what tasks aren't" and "choosing to postpone certain tasks." We therefore first removed a participant's redundant action steps and then counted the number of action steps per participant. The quality of action steps was assessed by means of four indicators: *specificity*, *uniqueness*, *behavior*, and *approach goal orientation*.

Specificity concerns the degree to which action steps were concrete (as opposed to vague/undefined). Examples of concrete action steps are "make decisions independently and then evaluate with my supervisor whether I have taken these decisions correctly" or "discuss during my performance review that the current internship is actually too heavy." Examples of vague/undefined action steps are "reflecting" or "better listening." All action steps were coded on a 4-point scale ranging from 0 (*not concrete at all*) to 4 (*very concrete*).

Uniqueness refers to the extent to which action steps belonged to a unique category of actions within the set of action steps a participant had described. Examples of unique action categories are 'time management' or 'communication with a relevant other.' A unique action step was coded as 1 whereas an action step that belonged to the same category as a participant's other actions was coded as 0. For example, "plan time for myself to relax/exercise" and "create a day schedule with small goals per day" were coded as unique actions steps, whereas "do not continue working at home" and "work as little overtime as possible" were coded as belonging to the same category (i.e., regulation of working hours).

Behavior concerns the extent to which action steps reflected behavior rather than cognitions (thoughts). Examples of behavioral action steps are "going for a run" or "making an appointment with my supervisor." Examples of action

steps that reflect cognitions are "thinking about my future job" or "analyzing my problem." Behavioral action steps were coded as 1, all other action steps were coded as 0.

Approach goal orientation concerns the extent to which action steps reflected an approach (as opposed to avoidance) orientation. An example of an approach-oriented action step is "discuss this problem with colleagues for tips." An example of an avoidance-oriented action step is "trying to look at myself less judgmentally". Approach-oriented action steps were coded as 1, whereas avoidance-oriented action steps were coded as 0.

In pairs of two, the authors conducted the coding of the quality indicators based on the above-described coding scheme, after first having discussed the coding scheme with each other. After coding a subset of the responses (i.e., responses of the first 60 participants), we calculated the interrater reliability (i.e., Cohen's kappa) between the two coders for each quality indicator. If the interrater reliability was not yet sufficient (below .70), the two coders discussed their scoring and, if necessary, revised the coding scheme. Hereafter, they continued coding a second subset (or the complete set) of responses. The two coders discussed remaining differences and came to a unanimous coding decision.

5.3 Additional Measures: The Effects of Solution-Focused and Problem-Focused Coaching Questions on Cognitive Flexibility

Next to the outcomes discussed in the main paper, we included an additional outcome, that is cognitive flexibility. Cognitive flexibility refers to an individual's capacity to flexibly process information and making use of flat associative hierarchies (De Dreu et al., 2011) in pursuit of a solution or goal. This skill is particularly valuable for coaching clients that need to break loose from traditional ways of thinking and explore alternative ways to approach their

problem. Coaches can use specific techniques, such as the miracle question, to help their clients to think out of the box. By stimulating the client to think about a world where the problem is absent, people can experience themselves in uncharted waters freed of the restrictions tied to the problem. Theeboom and colleagues (2016) found that solution-focused questioning (as opposed to problem-focused questioning) led to more cognitive flexibility in a sample of students that completed a self-coaching exercise. In this study, we examined whether this finding was replicated in a sample consisting of working adults. Additionally, we aimed to investigate the effects of an alternative solution-focused coaching question, that is, the success question. In the success question, people are instructed to think back to previous behaviors that have helped in managing the problem. Although we expect that the success question—just as the miracle question—stimulates associative thinking, the focus is restricted to past behaviors. Consequently, we expected that people in the miracle condition will experience more cognitive flexibility because of their unrestricted attentional focus.

In this study, cognitive flexibility was measured with the Category Inclusion Task (CIT; Rosch, 1975), as in prior coaching research (Theeboom et al., 2016). Participants were asked to rate how prototypical objects are for a particular category using a 10-point scale ranging from 1 (*doesn't belong into this category and does not resemble at all*) to 10 (*belongs into this category and resembles a lot*). Participants rated three examples in four categories that were either strong, intermediate, or weak examples of the category. We used vehicles, furniture, vegetables, and clothing as the categories, with bus, airplane, camel (vehicles), couch, lamp, telephone (furniture), carrot, potato, garlic (vegetables), and skirt, shoes, handbag (clothes) as the strong, intermediate, and weak examples of the category.

> *Hypothesis A1*: Compared to problem-focused questioning, solution-focused questioning leads to higher cognitive flexibility (a). Compared to the solution-focused success question, the

solution-focused miracle question leads to higher cognitive flexibility (b).

5.3.1 Results

We predicted that the solution-focused miracle condition and the solution-focused success condition would elicit higher cognitive flexibility than the problem-focused problem condition (HA1a) and that the solution-focused miracle condition would elicit higher cognitive flexibility than the solution-focused success condition (HA1b). We found no support for these hypotheses. $F(2, 180) = 0.40$, $p = .672$, $\eta p2 = 0.04$. Participants in both the miracle ($M = 4.70$, $SD = 1.64$) and the success condition ($M = 4.50$, $SD = 1.25$) did not report higher cognitive flexibility than participants in the problem-focused condition ($M = 4.54$, $SD = 1.10$).

5.4 Problem Description: Examples

Example 1: "The workload is high. We have long days of surgery and are working in a small group, so the pressure is high. There is quite a generation gap between the senior specialists, and the younger generation of residents. Many of us, including me, wonder how sustainable the profession is in its current form, as 'nowadays' things like family life become more important than they used to be. It is difficult to talk about this with the older generation."

Example 2: "My supervisors are hardly involved in my training and I receive little to no guidance."

Example 3: "As an inexperienced assistant, there are many things I don't know. Nurses expect me to know everything. How to deal with this? Saying you don't know something doesn't seem to be received positively. But pretending to know when you don't doesn't feel right."

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CHAPTER SIX

GENERAL DISCUSSION

"Coaching has helped me enjoy my work more, feel closer to myself again, and experience growth opportunities despite a work environment I still regularly consider unhealthy."

Physicians are increasingly burned out due to a combination of extensive demands that are tied to their profession and a lack of support and resources (Rotenstein et al., 2018; Shanafelt et al., 2015, 2022; Wallace et al., 2009). This fuels concerns about their sustainable employability and the safety of patients (Hall et al., 2016; Hodkinson et al., 2022; Salyers et al., 2017). Consequently, calls for action have been made to address high workloads and an unhealthy medical culture of perfectionism, overwork, and lack of vulnerability at the system level (Montgomery, 2014; Shanafelt et al., 2017, 2019). At the same time, individual-level interventions (i.e., physician-directed, such as coaching) are also needed as they can help to relieve the stress of medical practice in the here and now by decreasing job demands and increasing job and personal resources (McGonagle et al., 2020; for a review, see Panagioti et al., 2017; Regehr et al., 2014). Yet, little is known about the effects of such interventions in general and coaching in particular (Gazelle et al., 2015), let alone about the mechanisms underlying successful coaching (Bachkirova et al., 2015) and the support that physicians may want or need across different career stages and situations (Dyrbye et al., 2013). Such insights, however, are crucial for tailoring and thus increasing the effectiveness of coaching for physicians. In this dissertation, I have addressed these questions throughout four empirical chapters.

Research question 1: *What are risk and protective factors of physician well-being?*

To better understand physicians' needs and the type of support that might promote their employability across different career stages, I studied physicians' functioning through the lens of the Job Demands-Resources framework (JD-R; Demerouti et al., 2001). Specifically, in Chapter 2, I investigated what types of job and personal characteristics (i.e., job demands and job and personal

resources) were associated with physicians' burnout and work engagement and if such relationships differed between specialists and residents. Results showed that the associations between job demands and job and personal resources with outcomes were generally in line with the JD-R framework—demands were related to burnout symptoms, and job and personal resources were related to work engagement—but differed for residents and specialists. Psychological capital was (negatively) associated with burnout only for specialists, whereas psychological flexibility was (negatively) associated with burnout only for residents. Colleague support (positively) and self-compassion (negatively) were associated with work engagement, but only for specialists. These results suggest that residents and specialists may benefit from different job and personal resources to cope with the demands of their job. In light of these findings, and consistent with previous recommendations (Dyrbye et al., 2013), healthcare systems do well to provide tailored support to physicians at different career stages, rather than taking a one-size-fits-all approach.

Research question 2: *Does individual coaching improve physician well-being and functioning?*

One way to provide tailored support for physicians is through professional individual-level coaching. In Chapter 3, I therefore investigated the effectiveness of a professional coaching intervention for medical professionals. The results of a controlled field experiment indicated that coaching increased physicians' resources (e.g., psychological capital, self-compassion, autonomy) and reduced their emotional exhaustion, which is a core symptom of emerging burnout (Bakker et al., 2001). The findings of this study show that coaching is a promising intervention to not only reduce burnout symptoms directly but also to prevent their onset indirectly through the strengthening of job and personal resources.

Research question 3: *What are the benefits of coaching compared to other support interventions?*

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Yet, coaching is just one of many interventions that can help medical professionals to alleviate work-related stress (Graveling et al., 2008; Panagioti et al., 2017). Particularly in times of increased workload, such as during the COVID-19 pandemic, healthcare organizations tend to provide various forms of support to their staff yet rarely assess the effectiveness of such programs (Muller et al., 2020). To address this void, in Chapter 4, I investigated the effects of several support programs during the COVID-19 pandemic. Specifically, I investigated physicians' tendency to seek professional support (i.e., support from a coach or mental health expert) and other forms of support (e.g., peer support) and how these interventions were related to exhaustion and work engagement during a period of eight consecutive months. Based on longitudinal data of 378 medical specialists and residents, the results indicated that physicians were more likely to seek support in months when they experienced relatively more demands, fewer resources, and more exhaustion. Furthermore, the results showed that professional support was associated with a relative improvement in work engagement (but not exhaustion), while organized group support was associated with a relative deterioration of exhaustion over time. Consistent with JD-R theory (Demerouti et al., 2001), job control and psychological capital buffered the workload-exhaustion relationship. These findings support the notion that support programs, such as coaching, cannot counteract burnout in times of structurally increased workload but halt an erosion of work engagement. Additionally, the results highlight that peer support may not always help; rather, it can even hinder physicians' well-being.

Research question 4: *What are the underlying mechanisms of coaching?*

Chapter 5 specifically focused on the process of coaching. Having established in Chapter 3 of this dissertation that 'coaching works' (for a review, see Boet et al., 2023; Jones et al., 2016; Theeboom et al., 2014), I proposed that not all types of questions asked during the coaching process are equally effective. Based on the premises of positive psychology (Seligman & Csikszentmihalyi, 2000) and solution-focused brief therapy (De Shazer, 1988), and following

previous research (Grant & O'Connor, 2010; Theeboom et al., 2016), I expected that solution-focused questions would be superior to problem-focused questions in promoting key outcomes of coaching. Results confirmed that solution-focused questions increased people's immediate affective positive states and goal-directed motivation more than problem-focused questions did. Both approaches, however, were equally effective for self-efficacy, immediate action planning, and execution during a brief follow-up period and equally increased goal attainment. These findings shed light on the differential effects of commonly used coaching techniques and, as such, help to advance our understanding of how coaching works.

Coaching for Change

The joint findings of this dissertation showed that coaching facilitated change and consequently helped to promote physicians' overall well-being and functioning. In addition, coaching counteracted a loss of work engagement during the COVID-19 pandemic and facilitated goal attainment during self-coaching.

Across industries, coaching has long been recognized for its positive effects on performance, learning and development, and well-being (Jones et al., 2016; Theeboom et al., 2014) and has been booming ever since (Athanasopoulou & Dopson, 2018). Its clear focus on goals and achievement (Grant, 2020) has made coaching a popular change methodology for professional development. In healthcare, however, coaching has not gained much traction (Gazelle et al., 2015). For physicians, coaching—and support-seeking in general—tends to be stigmatized as a weakness or personal flaw (Brower, 2021; Shanafelt et al., 2019). It is only recently that coaching as a professional development intervention has made its way into the field of healthcare (Dyrbye et al., 2019; McGonagle et al., 2020; for a review, see Boet et al., 2023). In this dissertation, I showed across three different empirical studies if and when coaching is effective for physicians. Below, I discuss how my findings illustrate that

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coaching is a promising intervention to promote positive and potentially sustainable changes in physicians' well-being and overall functioning.

First, in Chapter 3, I showed that physicians are no exception to the rule: Professional coaching increased physicians' personal and job resources (i.e., their psychological capital, self-compassion, and autonomy) and reduced emotional exhaustion, which is in line with findings from recent intervention studies (Dyrbye et al., 2019; McGonagle et al., 2020). In fact, results indicated that coaching not only increases resources but also influences physicians' perceptions of job demands: Participants reported reduced job insecurity and reduced work-home conflict (see also Ladegard, 2011). This finding signals that coaching—through its focus on strengthening personal resources and coping—changes how people perceive and appraise their environments, including job demands (Judge et al., 2000). This notion aligns with the transactional model of stress, which posits that individual appraisals dictate people's experience of demanding situations (Lazarus & Folkman, 1984). The same job demand can, in fact, either be appraised as hindering (i.e., thwarting personal growth or goal attainment) or as challenging (i.e., a chance for growth and achievement; Bakker & Sanz-Vergel, 2013; LePine et al., 2005), depending on individual and environmental resources. Thus, when coaching provides physicians with the necessary resources to perform or cope with a particular task (e.g., a challenging medical procedure), it can result in a more positive appraisal of the job demand, which lessens the extent to which the demand is seen as stressful or hindering in the first place (Lazarus & Folkman, 1984). Alternatively, coaching may enable employees to actively *change* their job demands through self-initiated job crafting behaviors (DuPlessis et al., 2021; Wrzesniewski & Dutton, 2001). They may aim to mobilize or increase their job resources (e.g., taking on more autonomous tasks) or decrease hindrance demands (e.g., delegating tasks or decreasing role ambiguity) that stand in the way of goal progress (Tims & Bakker, 2010; Zhang & Parker, 2019). The results of Chapter 3 suggest that coaching can indeed kill two birds with one stone: It can change physicians' perceptions of job demands and increase

important job and personal resources that help to create a less demanding work environment.

Second, the findings of Chapter 4 indicated that coaching helped to promote physicians' functioning—even in times of elevated workload. Professional support—i.e., support from a coach or mental health expert—was associated with a relative improvement in work engagement during eight consecutive months of the COVID-19 pandemic. Thus, while coaching could not prevent a deterioration of emotional exhaustion, it did prevent further erosion of work engagement, which is considered a protective factor for patient care (Loerbroks et al., 2017; Prins et al., 2009). This finding indicates that professional support interventions have added value to the functioning of physicians, even in times of structurally increased workload, such as the COVID-19 pandemic.

Third, the findings of Chapter 5 showed that it does not necessarily take extensive coaching to promote change among physicians: A brief, self-coaching writing exercise already led to perceived increases in goal attainment among medical residents. As one of the participants put it: "Structurally writing down what you could do already gives a sense of empowerment." Interestingly, these effects were stable during a brief follow-up period of 14 days. The results indicate that structured self-reflection—here in the form of a coaching writing exercise—can effectively be used to promote goal attainment, a finding that had previously received only limited support (Grant & O'Connor, 2010; Losch et a., 2016). While it is important to note that self-coaching is in many ways different than real-life coaching facilitated by a professional—not least through the absence of any relational features that are considered decisive for coaching success (Graßmann et al., 2020)—this finding may stimulate questions about the minimally effective 'dose' of coaching as well as effective modes of delivery. In a professional setting where time is scarce and resources are limited, the combination of different modes of delivery for coaching (e.g., face-to-face, remote, and self-coaching) may provide time- and cost-efficient alternatives to traditional forms of coaching, and as such, has promise (Dyrbye et al., 2019; Terblanche et al., 2022).

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Taken together, the findings from Chapters 3, 4, and 5 support the notion that professional coaching is an effective change intervention to promote physicians' well-being and overall functioning through decreasing their experienced job demands and increasing their job and personal resources. Notably, such positive change is also found in work situations with an increased workload and for different modes of delivery for coaching.

Resources as Changemakers

The joint findings of this dissertation showed that resources were vital in safeguarding physicians' well-being and employability as they offset the stressor-strain relationship and promoted physicians' work engagement. Findings also showed that coaching can effectively help to build and strengthen physicians' resources.

The Effects of Resources

Our results showed that resources helped to safeguard physicians' well-being and functioning. The idea that resources are vital in helping people handle stressful situations is by no means new (Bakker et al., 2005; Bandura, 1991; Hobfoll, 1989). Following the definition that resources are "anything perceived by the individual to help attain [...] goals" (Halbesleben et al., 2014, p. 1338), they seem to be functional by definition. In line with this idea, resources have been shown to 'buffer' the impact of high job demands on burnout (Bakker et al., 2005), which highlights their potential to offset extensive demands and, in turn, derail the strain process leading up to burnout (Demerouti et al., 2001). Although the 'buffering effect' of resources has predominantly been confirmed for *job* resources (Bakker & Demerouti, 2017), the results discussed in Chapter 4 of this dissertation support such an effect for both job (i.e., job control) and personal resources (i.e., psychological capital).

The findings of Chapter 2 showed that, in keeping with the premises of the JD-R framework (Bakker & Demerouti, 2007), personal resources play a crucial

role in preventing physician burnout and promoting work engagement. It was particularly personal resources (rather than job resources) that seemed to safeguard physicians' work engagement and lessen the risk of burnout. Specifically, for medical residents, self-compassion (i.e., being kind towards yourself) and psychological flexibility (i.e., staying effective despite problems) seemed relevant for their well-being. It is possible that these resources helped trainees cope with the specific demands present during residency—a period characterized by information overload and insecurity (Conrad, 1988; Levey, 2001)—and major life events. Accepting one's inexperience, forgiving one's deficiencies (i.e., self-compassion), and remaining effective despite self-doubt and worries (i.e., psychological flexibility) may help medical residents to navigate this challenging start of their careers effectively. Contrary, medical specialists benefitted most from psychological capital (i.e., being hopeful, optimistic, self-efficacious, and resilient), a resource that is largely performance-oriented and considered to stimulate goal-directed action (Luthans & Youssef-Morgan, 2017). As such, psychological capital can help medical specialists to effectively manage their (high) workload, which may explain the strong negative relationship with burnout in the first study.

In sum, I show that it is particularly personal rather than job resources that promote the well-being and functioning of physicians. However, whether and which personal resources are functional for physicians' well-being may vary across career stages.

Resource Generation

Findings showed that coaching can effectively help to generate resources. If resources are limited, people need to build new or strengthen their existing resources to be successful at goal attainment (Hobfoll, 1989). A professional coach can facilitate this process: "Clients come to coaching because there is a problem they need or want to solve or a goal they want to attain" (Grant, 2013, p. 16). The coach's task is to motivate the client on their way to goal pursuit by identifying strengths and building self-efficacy, as well as by helping identify resources that can assist in action planning (Grant, 2011). In other words: The

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coachee needs to mobilize resources that will be functional in achieving goals. As such, resources play a crucial role in the coaching process from the beginning.

The findings of Chapter 3 showed that coaching helps to build and strengthen physicians' resources: After coaching, physicians reported increased psychological capital, self-compassion, and autonomy, a finding that is in line with other research (Fontes & Dello Russo, 2021; McGonagle et al., 2014, 2020). Interestingly, physicians who were more exhausted and had lower resources at baseline were more inclined to register for the coaching program. This self-selection process into coaching was also recognizable from the findings of Chapter 4: Physicians were more inclined to partake in support programs (such as professional coaching) in months when they experienced more exhaustion, greater demands, and fewer resources. Although this finding supports the notion that physicians do seek support eventually, it also underlines that such support-seeking behaviors may be initiated too late: Only when demands have piled up, resources have been depleted, and burnout is on the verge, physicians reach out for support. While this is likely a result of self-care neglect and the stigma around support seeking in healthcare (Bynum & Sukhera, 2021), physicians must seek timely support to alleviate symptoms early on. Framing interventions as developmental rather than reactive may help to decrease resistance (Boet et al., 2023). More so, if coaching is implemented in organizations structurally, i.e., without a direct cause or problem, physicians can benefit from it for their professional development. Only then can coaching live up to its full potential by supporting both growth and development as well as support needs of physicians.

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These results stress that resources are not fixed but can be built through coaching. Especially in the high-demanding medical work environment, routine coaching may help to maintain, mobilize, and strengthen rather than merely replenish resources.

Social Support as a Job Resource – Help or Hinder?

The joint findings of this dissertation showed that social support was sometimes—but not always—helpful for physicians' well-being. Whether or not support is beneficial may depend on the *type of support* provided, the *mode of delivery*, and the *conceptualization* of support as reception or provision.

First, whether social support helps or hinders physicians' well-being may depend on whether physicians' support needs are met by the *type* of support provided. Social support is an important coping resource (Cohen & Wills, 1985; Zimet et al., 1988), that can serve different functions: It can have emotional value (i.e., signaling love and care), be instrumental (i.e., offering tangible, concrete assistance), or informational (i.e., providing information or guidance; Helgeson, 2003). All three types of social support are considered to facilitate coping under stress (Cohen & Wills, 1985; Helgeson, 2003). The benefits of social support for physicians may depend, however, on a good fit between physicians' support needs and the type of support provided (Cohen & Wills, 1985). The results of Chapter 2 showed that only specialists but not residents benefited from colleague support. It is possible that the type and quality of peer support provided to residents is not (sufficiently) functional as a coping resource. The nature of residency (e.g., regular rotations) might prevent residents from genuinely connecting and experiencing their colleagues as sources of emotional support. In addition, residents may be reluctant to rely on informational support (e.g., for a second opinion) from fellow residents that share similar education and knowledge; if informational support is needed, people prefer experts (such as specialists) over laymen (Helgeson, 2003). Similarly, in a study among junior doctors, only consultant (but not colleague) support was linked to reduced burnout (Sochos et al., 2012). Specialists, on the contrary, work in more permanent teams with interdependent work relationships that may afford companionship, intimacy, and reassurance during emotional and stressful events more easily.

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The findings of Chapter 4 also revealed that social support is not always beneficial. Although (monthly) peer and managerial support were linked to (monthly) work engagement, the results also showed that peer support strengthened rather than weakened the workload-exhaustion relationship. In other words: Peer support did not facilitate but rather hampered physicians' coping with high workload, ultimately increasing feelings of exhaustion. This finding is not only counterintuitive—given the general belief that social support is beneficial—but also contradicts theorizing and empirical findings of support as a buffer of stress (Bakker et al., 2005; Cohen & Wills, 1985; Van der Doef & Maes, 1999; Viswesvaran et al., 1999). Although our brief measure of social support does not allow for differentiation between different support functions, it is possible that the type of support did not match physicians' support needs. According to Jacobsen (1986), people under stress benefit most from informational support (i.e., information on how to *cope* with the stressor) when coping with a stressor. This idea maps onto the phase in which data collection took place, which was a couple of months into the COVID-19 pandemic (from March 2020 onwards). The participation in interventions that provided information (e.g., about COVID-19 infections and regulations, meditation via an app) was almost six times higher at the start of data collection than at the end of the data collection, lending support to the idea that physicians were initially mostly looking for informational support to cope with the stressors of the COVID-19 pandemic.

Second, the benefits of social support may depend on the *mode of delivery* and the setting in which it is provided (e.g., support group versus professional counseling). The results of Chapter 4 revealed that physicians with a greater need for support (i.e., with fewer resources) were more likely to participate in peer support interventions to begin with. Given that people within the same support network typically need support themselves (Helgeson, 2003) and the relatively lower availability of resources among this group of physicians, it is possible that their capacity to provide adequate support to peers was also limited. Additionally, peer support may not necessarily lead to actual changes and solutions that physicians can use to improve coping. When peer support

turns into co-rumination, that is, "excessive and negative problem talk about an issue during a socially supportive interaction" (Boren, 2014, p. 4), expressing such negative feelings will not fix but sustain a focus on the problem, which prevents building solutions. Such co-rumination has been linked to increased physical and psychological stress (Byrd-Craven et al., 2008, 2011; Rose et al., 2014), including at the workplace (Boren, 2014). While venting to colleagues may feel deliberating in the short run, peer support groups may only be helpful if they provide people with tangible assistance for coping with their problems (Carkhuff, 1973, as cited in Helgeson & Gottlieb, 2000). Finally, it is possible that peer support is meant well but received badly. Such "unintended support failures" can, for example, occur if peers minimize the severity of one's problem with forced cheerfulness ('look on the bright side') or give unwanted advice as non-experts on the matter (Helgeson, 2003, p. 27). As peer support groups tend to be less structured than other forms of support (e.g., counseling), it is impossible to control the nature of interactions and the type of support provided (Helgeson, 2003).

Third and finally, whether social support is beneficial may depend on its *conceptualization* as reception versus provision. People are not only "support resources" but also "support burdens" (Helgeson, 2003, p. 27): The provision of all types of social support—listening and comforting, giving advice, or a helping hand—requires the provider to invest resources (Lin et al., 2017), which can be taxing (Lanaj et al., 2016). Although social support is typically beneficial for the receiver—the mere existence of social relationships is related to a better quality of life (Cohen & Wills, 1985)—the provision of it can be costly, especially if the provider's own resources have been exhausted. Providing support to peers may not only deplete one's own resources, but the negative emotions of peers may also be 'infectious', an idea that is known as emotional contagion (Barsade, 2002). The negative emotions of peers may spill over and may, in turn, bring down individual team members, triggering their further depletion (Petitta et al., 2017).

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To conclude, whether social support is helpful may depend on the type of support provided, the mode of delivery, and whether the provision is taxing for the provider.

Conclusion

The surge in burnout cases among physicians has made it imperative to study risk and protective factors of their well-being and functioning. The findings from four empirical chapters have revealed that job and personal resources play an essential role in preventing burnout and promoting work engagement. Yet not everyone benefits from the same resources equally (Chapter 2), and resources that appear beneficial at first glance might fall short of doing so (Chapter 4). Specifically, receiving (and providing) peer support is a complex venture that is not exclusively beneficial for physicians' well-being, and, as such, requires a more differentiated analysis of its effects in healthcare settings. Nonetheless, resources in general, and personal resources in particular, provide a promising starting point for individual-level intervention, with professional coaching being a prime example (Chapter 3). In sum, this dissertation emphasizes the importance of individual-level interventions in combatting physician burnout and provides insight into the mechanics of coaching as a promising intervention strategy.

Implications

The joint findings of this dissertation have important implications for the field of both healthcare and coaching. First, findings revealed that resources function as protective factors for physicians' well-being and functioning. Timely intervening is, therefore, crucial. Second, all findings point towards customization as key for effectively promoting physicians' well-being, both across career stages and changing situational demands. Coaching can serve this purpose well.

Prevention is Better Than Cure

Results revealed that resources are vital in preventing burnout and promoting work engagement. Implementing interventions that strengthen job and personal resources, therefore, has promise in promoting physicians' well-being.

Resources play a crucial role in the prevention of work-related stress and burnout (Bakker et al., 2005; Cohen & Wills, 1985; Xanthopoulou et al., 2007). In line with landmark theories of occupational stress and health (Bandura, 2001; Bakker & Demerouti, 2007; Hobfoll, 1989; Karasek, 1979; Lazarus & Folkman, 1984), the results of the first three empirical chapters demonstrate that job and personal resources may act as potential buffers against high job demands, and, hence, as protective factors for physician well-being. Even though not all types of resources 'work' for everyone (Chapter 2) and under all circumstances (Chapter 4), the results support the notion that having personal resources (e.g., feeling capable, self-efficacious) along with job resources (e.g., feeling appreciated) may help physicians to effectively manage job demands that might otherwise lead to a draining of resources, and eventually burnout (Bakker et al., 2005; Crawford et al., 2010; Xanthopoulou et al., 2007).

While job resources such as social support can be directly derived from the organizational environment (Nahrgang et al., 2011), personal resources lie within people themselves as they reflect their general beliefs to control and influence their environment successfully (Hobfoll et al., 2003). Being able to draw from both these types of resources helps people to be resilient in the face of stress, which supports the idea of a *buffering* role of resources in the stressor-strain relationship (Bakker & Demerouti, 2007; Xanthopoulou et al., 2007). The results of Chapter 4, which revealed moderating effects of psychological capital and job autonomy in the workload-exhaustion relationship, explicitly support the presence of such effects. The results of Chapters 2 and 3, which revealed negative relationships between resources and burnout (Chapter 2) and increased resources and well-being post-coaching (Chapter 3), further support that resources directly or indirectly impact physicians' well-being. It is important to note, however, that resources do not

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exist in isolation but in synergy: Resources "travel in packs", so-called resource caravans (Hobfoll, 2018, p. 107), and reinforce one another. For example, personal resources such as self-esteem or self-efficacy can stem from a positive social environment, including the work environment (Hobfoll et al., 2018). Similarly, job resources can activate the personal resources self-efficacy and optimism, which supports the idea that a resourceful work environment *can* serve as a breeding ground for personal resources (Xanthoupoulou et al., 2007). The results of Chapter 3 further strengthen such a multiplying effect of resources, which may also be elicited through coaching: Coaching led to an increase in both job and personal resources.

The joint results of this dissertation clearly indicate the potential for individual-level interventions to support physicians' overall functioning. Yet, in healthcare, individual-level interventions have often been considered a "respite rather than a solution" (Montgomery, 2014, p. 53). Physician-directed interventions such as coaching, however, might not only offer short-term relief in a high-paced working environment (e.g., decrease exhaustion at the time of intervening) but might also prevent the onset of burnout through the strengthening of resources and the development of concrete coping strategies (Boet et al, 2023; Dyrbye et al., 2019; McGonagle et al., 2020). Yet, it is crucial that the provision of such interventions does not wrongly send the message that burnout occurs due to a lack of resilience and that physicians need to 'toughen up' to better cope with the rigors of their job (Montgomery, 2014). While it is important to acknowledge that individual-level interventions have promise, they cannot substitute system-level action to tackle the origins of physicians' unwell-being.

Altogether, despite their limits, individual-level interventions can effectively help physicians navigate challenges at work by strengthening resources and providing tangible support. As such, they offer valuable support and can help to prevent a further decline in physician well-being and functioning.

Unique Situations Call for Unique Solutions

The findings of this dissertation stress that a one-size-fits-all approach to physician well-being is not adequate nor effective. Rather, support needs to be tuned to the unique needs of physicians across career stages and situations—a demand coaching interventions readily meet.

The findings of Chapter 2 stress the importance of tailoring interventions by career stage, which is in line with previous findings among physicians (Dyrbye et al., 2013). Early career physicians, such as the residents in our sample, face other professional challenges (e.g., work-home conflict; Dyrbye et al., 2013) and benefit from other types of resources than their more senior colleagues (e.g., psychological flexibility rather than peer support), which calls for a customized response to physician well-being. Although some intervention strategies, such as stress-management training and mindfulness meditation, appear beneficial regardless of career stage (Bragard et al., 2010; Goodman & Schorling, 2012; Krasner et al., 2009; Regehr et al., 2014; Rosenzweig et al., 2003), the results of Chapter 2 emphasize the need to address career- and life-stage specific demands when designing well-being interventions.

The findings of Chapter 3 further underline that tailored support is promising for enhancing physicians' well-being, which is in line with other recent intervention studies (Dyrbye et al., 2019; McGonagle et al., 2020). Coaching is, per definition, highly individualized, client-driven, and customized (Bozer & Jones, 2018; Grant, 2003). Also, in the study in this dissertation, physicians and coaches received ample freedom to shape the coaching process (i.e., the topics to be discussed, the speed of trajectories, and the coaching methods) with minimal regulations. Compared to alternative, evidence-based well-being interventions, such as standardized mindfulness-based stress reduction programs, coaching may thus offer an advantage because of its custom-tailored approach. Indeed, Chapter 4 revealed that only individualized professional support programs (such as coaching and counseling) positively affected physicians' work engagement during the COVID-19 pandemic. Yet, despite the generally positive effects, the findings of Chapter 4 also revealed that the

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potential of professional support interventions may dampen under extraordinary pressures such as the COVID-19 pandemic. It is possible that personal safety needs need to be met before physicians can tend to other needs, such as their well-being (Shapiro et al., 2019). As the authors explain: "It is hard to benefit from resilience courses or meditation if we are dehydrated, depressed, or scared for our physical safety" (Shapiro et al., 2019, p. 557). The fact that disease outbreaks pose a significant threat to physicians' own health and safety (Ing et al., 2020; Kannampallil et al., 2020; Liu et al., 2020) may explain the limited effectiveness of the (professional) support intervention in our study.

Also the findings of Chapter 5 stress customization as one of the key principles for effective coaching: Not all types of coaching questions (i.e., solution-focused and problem-focused questions) worked equally well. While both approaches were equally effective for self-efficacy and goal-directed outcomes, solution-focused questions increased people's immediate positive affective states and goal-directed motivation more than problem-focused questions did. These findings suggest that clients benefit from both types of coaching questions for their goal-directed self-regulation (e.g., action planning), but if the goal of coaching is to make people feel good (i.e., increase positive affect, decrease negative affect), solution-focused questions are the preferred choice. To help clients optimally throughout the different stages of the coaching process (Theeboom et al., 2017), coaches should thus flexibly tailor their intervention and questioning to the client, the problem at hand, as well as contextual and cultural factors (Bozer & Delegach, 2019). Put differently; each specific coaching goal requires a specific coaching solution.

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The findings of this dissertation altogether stress the idea that customization—with coaching being a prime example—is key for successfully promoting physicians' well-being and overall employability.

Limitations

The studies of this dissertation are not without limitations. These will be discussed in the following.

Causality

The majority of studies included in this dissertation do not allow for causal inferences: The chosen study designs of the first three studies (i.e., cross-sectional and quasi-experimental design, as well as panel data) together with additional characteristics of the intervention study (i.e., multisite) omit causal inferences.

Although the results discussed in Chapters 2 and 4 overall were in line with our expectations and JD-R theory (Bakker & Demerouti, 2007; Demerouti et al., 2001), reverse or reciprocal relationships remain possible: It is possible that feelings of exhaustion—as assessed in studies 1 and 3—are not exclusively the result of job demands but also a possible antecedent, that is, if exhaustion can influence how employees perceive the demands of their job (Demerouti et al., 2004; Leiter & Durup, 1996). Similarly, job and personal resources may influence work engagement, which in turn might also foster resources (Llorens et al., 2007; Xanthopoulou et al., 2009a).

The multisite character of the intervention study (Chapter 3) included participants from multiple hospitals and departments, which also limits the potential to draw causal conclusions. Although we conducted several additional analyses to test if hospital and department affiliation influenced the effectiveness of the coaching intervention—which did not reveal substantial effects—only a fully randomized-controlled study design would allow us to resolve such concerns completely.

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Finally, participation in the coaching intervention was voluntary. Although this is an important prerequisite to developing an egalitarian coaching relationship and thus for coaching to be effective (Grant & Stober, 2006), such self-selection

led to baseline differences between the intervention and the control group: Intervention group participants reported significantly lower personal resources, higher demands, and exhaustion compared to control group participants, signaling a greater need for coaching compared to the participants in the control group. We can, therefore, not rule out a potential regression to the mean effect (Bland & Altman, 1994), and intervention effects should, consequently, be interpreted with caution.

Generalizability

The generalizability of findings may be—in part—limited by the nature of coaching (i.e., highly individualized), the modality of coaching (i.e., self-coaching), and the overall sample compositions across all studies.

Coaching centers around personally valued goals of the client (Grant, 2020) and is strongly tailored to clients' needs (Ives, 2008). Coaches flexibly adjust their conversations to best meet the needs of their clients, which means that coaching conversations (e.g., topic, techniques), as well as the coaching process (e.g., the pacing of trajectories, mode of coaching), can vary for different clients, as well as between coaches. While this flexibility is an important premise for successful coaching as it allows clients and coaches to agree on the goals and tasks of coaching (Gessnitzer & Kauffeld, 2015), such leeway comes at the cost of generalizability. Given that the coaching intervention (Chapter 3) was only regulated with regard to its overall structure (e.g., number of sessions), it remains unclear to what extent these findings are generalizable to other coaching formats (e.g., online coaching) or other professional groups within and outside of healthcare. However, the results of the online, self-coaching exercise (Chapter 5) were promising, suggesting that less traditional coaching modalities can be effective.

In Chapter 5, we studied one puzzle piece of the coaching process: the type of questions that coaches can use in practice. Yet, using an experimental study design and a self-coaching exercise rather than real-life coaching limits the extent to which these findings are also applicable to real-life coaching

conversations. Although the inclusion of working professionals (rather than students) increased the ecological validity of our findings, self-coaching lacks both the temporal dynamics of coaching and its relational components (e.g., relationship with coach). Our study, therefore, can only simulate a snippet of the coaching process rather than real-life coaching in its complexity.

Finally, the samples across all four studies were not equally distributed regarding gender: More than 70 percent of all participants were female in all studies. While such an uneven distribution is in line with the overrepresentation of women in healthcare professions generally, and in medical residency specifically, women and men work equally often as medical specialists in the Netherlands (Capaciteitsorgaan, 2022). To test if coaching is equally effective across genders, future research should aim to achieve a more representative gender composition with regard to specialists. Similarly, medical residents outweighed specialists in most studies, although this difference was negligible in the third empirical study. Finally, the first two studies had a majority of pediatricians in their sample compared to other specialties. Altogether, the restricted sample composition across all four studies might limit the generalizability of findings to physicians at different career stages, specialties, or professionals outside of healthcare.

Sustainability

The studies in this dissertation provide insight into the effects of coaching but not whether and how coaching effects can be maintained.

Coaching tends to be a short-term engagement, typically lasting for six sessions (Jones et al., 2016). In line with the definition of coaching as a goal-directed and solution-focused activity (Grant, 2003), goal attainment tends to be the central objective of coaching. Such focus also implies that the coaching engagement usually ends when the client has reached their goals. At the same time, coaching is costly and resource-intensive, also limiting its longevity. These aspects raise the question of whether coaching facilitates sustainable change beyond its coaching sessions and topics (Theeboom et al.,

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2014). Although we included a brief follow-up measurement in our experimental study (Chapter 5) in an attempt to assess if experimental effects can be sustained, it does not capture the type of sustainable change facilitated by real-life coaching. Recent intervention studies (Fontes & Dello Russo, 2020; McGonagle et al., 2020) demonstrate that the effects of coaching are long-lasting, yet more research is needed to explore how such effects can be transferred and maintained (Theeboom et al., 2014).

Altogether, these limitations call for a cautious interpretation of study findings while serving as important considerations for future research.

Future Directions

In the following, I discuss three important avenues for future research. First, scholars can contribute to systematic change in healthcare by paying attention to organizational- or multi-level interventions rather than individual-level interventions. Second, coaching may have potential cross- and spillover effects from the individual to the team and organizational level that to date have been neglected. Finally, understanding the coaching process and the underlying mechanisms and boundary conditions of successful coaching is decisive in moving the field of coaching forward.

Physician Well-being: Beyond Individual-Level Interventions

Physician burnout is rooted in the medical working environment and culture, with high workload being one of its prime causes (West et al., 2018). Surprisingly, interventions tend to target the individual—our intervention study as an example—rather than the organization: While I can show in this dissertation that physician-directed (or individual-level) interventions, such as workplace coaching, are beneficial for physicians in the short term and as such provide timely relief, it is important to realize that they do not provide a sustainable solution to the *cause* of physician burnout. That is, interventions directed at the organization (e.g., addressing workload and work schedules)

tend to have additional or larger effects than those directed at the individual (De Simone et al., 2021; Pangagioti et al., 2017). Although promising, only a few studies have soundly investigated interventions aimed at larger organizational structures, such as workflow or communication (De Simone et al., 2021). Given the anticipated benefits of organization-directed interventions for physician well-being, future research should make the test of these interventions a priority.

Although individual-level interventions cannot provide a solution to the organization-related causes of physician burnout, they do contribute in important ways to the development of a more employable and healthier workforce. As evidenced throughout the chapters, coaching can effectively promote physician well-being. As such, individual physicians can do their share in promoting a healthier culture. Particularly, physicians' strong work ethos and dedication—embedded in a professional culture of perfectionism— can backfire in the long run, as engaged employees are more likely to exhaust themselves over time (Junker et al., 2021). It may thus be particularly important for physicians to be aware of and guard themselves against early signs of exhaustion. Practicing self-care (e.g., sufficient sleep and breaks), delegating tasks, and communicating limits (e.g., unavailability during off-work hours) may be important steps in reducing the risk of burnout while signaling to colleagues that personal health is a priority rather than a needless luxury.

Crossover and Spillover Effects of Coaching

Research on the effectiveness of coaching has predominantly focused on individual-level outcomes (Theeboom et al., 2014) and has neglected outcomes that go beyond the coached individual, so-called 'crossover effects' (Song et al., 2008). Here, crossover effects refer to an interindividual, intradomain phenomenon where the effects of coaching 'travel' between people (e.g., colleagues) within one domain (e.g., work; Bakker et al., 2006; Song et al., 2008). Crossover effects will most likely occur in the work domain if colleagues physically cohere (Westman & Bakker, 2008). Emotional contagion—discussed in Chapter 4 as a potential explanation for the negative effects emerging from

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group support sessions—is an example of such a crossover effect, albeit a negative one (Barsade, 2002). To my best knowledge, only one study has studied coaching crossover or 'ripple' effects in the context of (leadership) coaching (O'Connor & Cavanagh, 2013).

Given that work in healthcare is becoming increasingly complex and interdependent (Figueroa et al., 2019; Havens et al., 2010), individual coaching may not only alter the behavior of the coached individual but also—potentially—that of their close colleagues as they adapt to these new behaviors (O'Connor & Cavanagh, 2013). Moreover, if coaching is widely embedded in an organization, department, or team, the effects of coaching across different members may accumulate and reinforce each other, potentially contributing to a (positive) shift in the organizational culture. That said, an organization that aims to promote team processes and performance rather than individual functioning may be better off implementing team coaching or training rather than individual coaching (Jones et al., 2019; Jones, 2022; Salas et al., 2008).

Next to crossover effects, coaching can also have extended effects beyond what is learned in the coaching sessions (Burke & Linley, 2007). Such 'spillover effects' are an intraindividual, interdomain phenomenon and, as such, reflect transfer within a person but across domains (e.g., between the work-home domain or for different life goals; Song et al., 2008). For example, coaching clients may transfer what they learned during workplace coaching to their home domain or other goals not discussed during the coaching engagement (see Burke & Linley, 2007). Understanding if and how such spillover effects occur is important for two reasons. First, if the effects of coaching are not limited to the problem that brought a client to seek coaching in the first place, coaching may be more than a temporal solution; rather, it may function as a sustainable behavior change technique that boosts benefits, and thus return of investment, beyond a particular coaching problem. Second, understanding how such spillover effects occur could help coaches actively stir the process so

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that what is learned during coaching can be applied to various contexts and coaching questions.

Coaching Process: What Makes Coaching Work?

As coaching takes place behind closed doors, exploring the coaching process is an ongoing challenge. Consequently, to date, little is known about "what is actually happening in the [coaching] session" (Bachkirova et al., 2015; p. 432). Moreover, the psychological mechanisms underlying positive client change ('what makes coaching work'; Bachkirova et al., 2015; Bozer & Jones, 2021) are little understood. At the same time, boundary conditions of effective coaching ('for whom and when does coaching work') and contextual factors (e.g., stakeholder involvement) are largely unexplored (Bozer & Delegach, 2019; Bozer et al., 2022). Although coaching as a profession, as well as a science, has been maturing, research in the past two decades has predominantly focused on coaching effectiveness (Boet et al., 2023; Graßmann et al., 2020; Jones et al., 2016; Theeboom et al., 2014; Wang et al., 2022) and has lagged behind in uncovering the processes underlying such effects. While most studies in this dissertation concern the effects of coaching, the last empirical chapter did focus on the process—that is, on the specific coaching techniques that coaches can use. Yet, to gain a deeper understanding of the workings of coaching, it is important to study coaching as it happens rather than in an experimental set-up: for example, through recordings of actual coaching sessions. Although such approaches tend to be met by coaches with resistance compared to the use of self-reports (Hinn & Kotte, 2021), they have the potential to truly uncover how coaching works. Alternatively, longitudinal and experimental designs, as well as observational studies, may serve to extend research into the potential drivers of coaching effectiveness (Bozer & Jones, 2018). Although a diverse set of potential antecedents of coaching success has been proposed (Bozer & Jones, 2018), including characteristics of both the coach (e.g., competence), the coachee (e.g., motivation), and interpersonal factors (e.g., trust, relationship), empirical tests of such effects are still largely pending or lack methodological rigor.

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Taken together, investigations into the coaching process, the psychological mechanisms underlying effective coaching, and its potential cross- and spillover effects from the individual to the team and organizational level can be considered a pressing future research inquiry. Such knowledge not only helps to build an urgently needed theoretical foundation for the field of coaching (Jones et al., 2016; Theeboom et al., 2014) but also advances coaching practice in important ways as it ultimately allows for better coaching conversations.

Concluding Thoughts

> *"Addressing the failures of the health care system will require uncomfortable reflection and bold action." (New York Times, 2023)*

Coaching is, in essence, about helping people change, moving from intent to action. This dissertation showed that coaching has promise for supporting physicians' change, including improved well-being and overall functioning, both of which are decisive for the future viability of healthcare systems. However, despite its promise, coaching is no panacea for the systematic shortcomings prevalent in healthcare: In order to protect physicians' health and that of their patients, rapid and bold action is needed. Healthcare organizations, too, need to move from intent to action and accelerate efforts to humanize the medical culture and improve working conditions. Only then, alongside system-level change, coaching can live up to its full potential and help physicians thrive in the challenging work environment that healthcare is.

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SUMMARY

The surge in physician burnout is causing concern among healthcare systems worldwide (Rotenstein et al., 2018). Burnout, a syndrome of emotional exhaustion, cynicism, and reduced professional efficacy (Maslach et al., 2001), occurs due to chronic workplace stressors (WHO, 2019). Such stressors are all too present in healthcare, including time pressure, shiftwork, demanding patient interactions, and many more. At the same time, resources are scarce, and support for physicians is limited (West et al., 2018). The high-stakes working environment and its extensive demands and scarcity of resources make healthcare a breeding ground for burnout. This is problematic at all layers of the organization: for physicians, their patients, and the organization itself. Burnout hurts physicians' well-being, obstructs their careers, impacts their functioning at work and thus patient care (Hodkinson et al., 2022), and is costly for the organization as it may lead to turnover and aggravate the healthcare workforce shortage (Han et al., 2019).

Well-being (or the absence of burnout) and work engagement are crucial for physicians' functioning. Job Demands-Resources Theory (JD-R theory; Demerouti et al., 2001) proposes that burnout and work engagement result from an interplay between job demands and resources. Job demands—those job characteristics that typically cost energy, such as workload—can initiate a health impairment process and lead to burnout. Job and personal resources—those job characteristics that are functional in meeting job demands and help to feel in control of one's work and energized—can initiate a motivational process and are the prime cause of work engagement. Additionally, they may reduce the impact of job demands on well-being. In other words: job and personal resources are crucial for maintaining optimal functioning at work, keeping burnout at bay, and maintaining high engagement. The health impairment and motivational process can, in turn, promote negative or positive outcomes, such as absenteeism or performance.

Professional coaching is a popular intervention to support employee well-being and functioning. Coaching, a collaborative, systematic, solution-focused, and typically short-term intervention to help clients achieve personally valued

goals (Grant, 2003), is widely used across ranks and organizational contexts and for various purposes, but typically to promote change of some sort. Despite its popularity, coaching in healthcare is scarce and tends to be used reactively rather than preventively. This is a missed opportunity, as coaching may support physicians beyond situations of distress. I propose that coaching may not only equip physicians with tangible resources to cope with the substantial demands they face but may also contribute to learning and development more broadly by facilitating opportunities for dialogue and reflection.

The primary aim of this dissertation is to identify effective strategies for promoting the well-being of physicians. To this end, I investigate (1) risk and protective factors of physician well-being across career stages, (2) the effectiveness of individual coaching for improving physician well-being and functioning, (3) the added value of coaching compared to other types of interventions during the COVID-19 pandemic, and (4) the underlying mechanisms of coaching.

Empirical Findings

Across four empirical studies using cross-sectional, intervention, longitudinal, and experimental data, I studied risk and protective factors of and means to improve physician well-being. Viewing physicians' job characteristics through the lens of JD-R theory, in **Chapter 2**, I investigated job demands and job and personal resources that help or hinder physician well-being across career stages. The results generally supported the health impairment and the motivational process proposed by JD-R theory across career stages. Demands (e.g., workload) were related to burnout symptoms, and job and personal resources (e.g., psychological capital) were related to work engagement in both specialists and residents. However, results also indicated that residents and specialists do not always benefit from the same resources for promoting well-being and work engagement. While psychological capital and colleague support were essential for specialists' well-being and work engagement, this

was not the case for residents who benefitted from psychological flexibility. These results point towards the need for healthcare organizations to meet career-stage-specific demands with matching resources and thus to provide specific rather than universal resources.

Coaching, being client-driven and individualized by nature, readily meets this need for customization. In **Chapter 3**, I investigated if a coaching intervention increased physicians' well-being. Physicians participated in six individual face-to-face coaching sessions with a professional coach. While the overall structure of trajectories (e.g., number of sessions) was standardized, participants and coaches were free to shape the sessions according to their needs and wishes (e.g., methods used, topics discussed). Compared to a control group who received no treatment, physicians undergoing coaching reported increased personal and job resources, psychological capital, self-compassion, and autonomy and reduced job demands and exhaustion. These results support the effectiveness of coaching as a change intervention in the workplace and extend previous effectiveness studies to healthcare.

In **Chapter 4**, I studied the effects of various interventions, including professional support from a coach or mental health expert, during a period of elevated stress. Amid the COVID-19 pandemic, we surveyed physicians for eight consecutive months. Our aim was twofold: first, understanding how changes in monthly job demands and job and personal resources relate to changes in monthly exhaustion and work engagement, and second, assessing the effects of support interventions on these outcomes. First, results supported JD-R theory's health impairment and motivational process, this time from a within-person perspective: in months when people experienced more workload, they also reported more exhaustion. Similarly, in months when people experienced more resources, they also reported more work engagement. Also, our results showed that the relationship between workload and exhaustion became weaker in months when people experienced more of the job and personal resources, psychological capital, and job control but became stronger in months when people received more positive feedback and peer support. Second, our

study was set out to help understand the effects of interventions frequently provided to healthcare professionals. Specifically, we compared professional support interventions with group or individual peer support alternatives. Who uses support interventions, and what is their use? Our results indicated—both at the between- and the within-level—that when people experience relatively higher demands, lower resources, and more exhaustion, they are more likely to participate in person-oriented support interventions, such as group or individual peer support or professional support, indicating that such interventions are sought after especially in times of strain. Interestingly, only professional support interventions, such as coaching or counseling, were associated with a relative improvement in work engagement, while organized group support interventions were associated with a relative worsening of exhaustion. Although unexpected, the latter finding aligns with our finding that peer support aggravated the workload-exhaustion link. In sum, these findings highlight the importance of (some) resources for functioning in high-strain situations and jobs and support the idea that professional support can be effectively used to support employees in demanding times.

Chapter 5 focused on an integral element of the coaching process: questions. Asking questions is likely the most basic yet fundamental element of coaching: It can trigger reflection, insight, and out-of-the-box thinking and, as such, promote change. Using an experimental study design and a self-coaching writing exercise, we compared the effects of different types of coaching questions: questions that prompted thinking about potential solutions to a challenging situation or problem (i.e., solution-focused questions) and questions that prompted thinking about the problem itself (i.e., problem-focused questions). Findings showed that participants experienced more positive affect, less negative affect, and higher approach goal orientation when being prompted to think about solutions rather than problems. However, both types of coaching questions were equally effective in promoting immediate action planning and execution during a brief follow-up period. Interestingly, participants reported increased goal attainment after the writing exercise in all conditions. It appears that solution-focused coaching questions are

particularly useful when coaches aim to promote immediate affective states and motivation. However, they are as effective as problem-focused coaching questions when coaching aims to promote goal-oriented behaviors. While these results show that different coaching questions can promote different coaching outcomes, they also indicate that change does not necessarily require extensive coaching but can sometimes be short and sweet – as is the case for our writing exercise.

Conclusions and Implications

This dissertation provides a starting point for effective health promotion for physicians. In line with JD-R theory (Demerouti et al., 2001), job and particularly personal resources emerged as important protective factors for physician well-being and functioning (Chapters 2, 3, and 4) throughout their careers. Personal resources, such as psychological capital, help people feel in control of their work and their demands. Such feelings of agency help tackle such demands and motivate people. While resources could offset the stressor-strain relationship (Chapter 4) and contributed to work engagement and well-being (Chapters 2 and 4), it also became evident that not all types of resources work for everyone (Chapter 2) and at all times (Chapter 4), and sometimes may even have adverse effects, as was the case for peer support (Chapter 4). To tap into those resources that are adequate and thus effective, it is crucial to not blindly prescribe one-size-fits-all solutions to physicians but rather tailor those to physicians' unique situations and needs. What helps one might not necessarily help another.

Coaching is an intervention that easily meets this need for customization as it is entirely tailored to the client's needs and strongly structured around the client's agenda. The joint findings of this dissertation suggest that coaching is an exemplary tool to support physicians' well-being and functioning: it helps reduce burnout symptoms and potentially prevents its onset through strengthening job and personal resources (Chapter 3). By integrating coaching

into the organizational culture and implementing it consistently throughout physicians' careers, rather than using it solely as a reactive measure for employees nearing burnout, coaching can be transformed into a preventive tool that proactively promotes well-being. After all, prevention is better than cure. Finally, self-coaching and moments of self-reflection, even if not facilitated by a professional coach, may also support physicians in navigating their careers and promoting positive change (Chapter 5). Although these findings are promising and suggest that coaching can play an essential role in physicians' health promotion, coaching can be little more than a band-aid if systematic changes in addressing workload and culture fail to materialize.

SAMENVATTING

SUMMARY IN DUTCH

De toename van burn-out bij artsen is zorgwekkend (Rotenstein et al., 2018). Burn-out, gekenmerkt door emotionele uitputting, cynisme en verminderde professionele efficiëntie (Maslach et al., 2001), is het gevolg van chronische stressoren op de werkvloer (WHO, 2019). Dergelijke stressoren zijn maar al te aanwezig in de gezondheidszorg, waaronder tijdsdruk, ploegendienst, en veeleisende interacties met patiënten. Tegelijkertijd zijn hulpbronnen schaars en is de ondersteuning voor artsen beperkt (West et al., 2018). Een werkomgeving waarin veel op het spel staat, hoge eisen worden gesteld en er schaarste is aan ondersteunende hulpbronnen maakt de zorg tot een broedplaats voor burn-out. Dit is problematisch voor artsen, hun patiënten en de organisatie als geheel. Burn-out schaadt het welzijn van artsen, belemmert hun carrière, en heeft een negatieve invloed op hun functioneren en dus op de kwaliteit van de patiëntenzorg (Hodkinson et al., 2022). Burn-out is bovendien kostbaar voor de organisatie omdat het kan leiden tot personeelsverloop, wat het personeelstekort in de zorg kan vergroten (Han et al., 2019).

Welzijn (of de afwezigheid van burn-out) en werkbevlogenheid van artsen zijn cruciaal voor hun functioneren. Volgens het Job Demands-Resources Model (JD-R model; Demerouti et al., 2001) ontstaan burn-out en bevlogenheid als gevolg van een wisselwerking tussen taakeisen en hulpbronnen. Taakeisen, oftewel aspecten van het werk die energie kosten, zoals werkdruk, kunnen een stressproces in gang zetten dat iemands gezondheid ondermijnt en uiteindelijk kan leiden tot een burn-out. Hulpbronnen, oftewel aspecten van het werk of personen die energie geven en helpen om aan de eisen van het werk te voldoen, zetten een motivatieproces in gang dat bijdraagt aan iemands werkbevlogenheid. Deze hulpbronnen kunnen bovendien de negatieve gevolgen van taakeisen voor iemands welzijn verminderen. Met andere woorden, werk-gerelateerde en persoonlijke hulpbronnen, zoals sociale steun of persoonlijke effectiviteit zijn van groot belang omdat ze zorgen dat werknemers niet burn-out raken, bevlogen zijn in hun werk en optimaal functioneren. Stress- en motivatieprocessen kunnen aldus leiden tot negatieve dan wel positieve uitkomsten voor werknemers en organisaties, zoals ziekteverzuim en werkprestaties.

Professionele coaching is in organisaties een populaire interventie om het welzijn en functioneren van werknemers te bevorderen. Coaching, een op samenwerking gebaseerde, systematische, oplossingsgerichte en meestal kortdurende interventie om cliënten te helpen persoonlijke doelen te bereiken (Grant, 2003), wordt gebruikt in allerlei professionele en organisatorische contexten en voor verschillende doeleinden, maar doorgaans met als doel verandering teweeg te brengen. Ondanks haar populariteit, is coaching in de zorg nog nauwelijks aan de orde en wordt het vaak eerder reactief dan preventief ingezet. Dit is een gemiste kans, want coaching kan artsen steun bieden in werk en loopbaan, dus ook als hun werksituatie minder belastend is. Immers, coaching kan artsen niet alleen handvatten bieden om beter met de eisen van het werk om te gaan, maar kan ook bijdragen aan hun persoonlijke ontwikkeling in brede zin doordat coaching ruimte biedt voor dialoog en reflectie.

Doel van dit proefschrift is bij te dragen aan het ontwikkelen van effectieve strategieën die het welzijn van artsen bevorderen. In dat kader onderzoek ik (1) risicovolle en beschermende factoren die samenhangen met het welzijn van artsen in verschillende loopbaanfasen, (2) de effectiviteit van individuele coaching voor het welzijn en functioneren van artsen, (3) de toegevoegde waarde van coaching in vergelijking tot andere soorten interventies tijdens de COVID-19 pandemie, en (4) onderliggende mechanismen van coaching voor het in gang zetten van verandering.

Empirische Bevindingen

In cross-sectionele, interventie-, longitudinale en experimentele studies, heb ik risico- en beschermende factoren voor het welzijn van artsen en manieren waarop hun welzijn kan worden bevorderd, onderzocht. In **Hoofdstuk 2** onderzocht ik, op basis van het JD-R model, welke taakeisen en hulpbronnen het welzijn van artsen in verschillende loopbaanfasen bevorderen of belemmeren. De resultaten ondersteunen over het algemeen het stress-

en motivatieproces zoals voorgesteld in het JD-R model: voor artsen in verschillende loopbaanfasen, hingen taakeisen (bijvoorbeeld werkdruk) samen met burn-out-symptomen en hingen hulpbronnen (bijvoorbeeld psychologisch kapitaal) samen met werkbevlogenheid. De resultaten lieten echter ook zien dat specialisten en artsen in opleiding niet altijd baat hebben bij dezelfde hulpbronnen. Terwijl psychologisch kapitaal en ondersteuning van collega's essentieel waren voor het welzijn en de bevlogenheid van specialisten, was dit niet het geval voor artsen in opleiding. Voor artsen in opleiding was met name psychologische flexibiliteit een belangrijke hulpbron. Deze resultaten maken duidelijk dat zorgorganisaties tegemoet moeten komen aan loopbaan-specifieke behoeften door het aanbieden van op maat gesneden—in plaats van algemene—hulpbronnen.

Coaching die gericht is op de behoeften van individuele cliënten, kan gemakkelijk voldoen aan deze wens aan maatwerk. In **Hoofdstuk 3** onderzocht ik of een coaching interventie het welzijn van artsen kon bevorderen. Artsen namen deel aan zes individuele face-to-face coaching sessies met een professionele coach. Terwijl de algemene structuur van de trajecten (zoals het aantal sessies) van tevoren was vastgelegd, konden deelnemers en coaches de sessies naar eigen behoeften en wensen vormgeven (zoals de gebruikte methoden en de besproken onderwerpen). Vergeleken met artsen in een controlegroep die geen coaching ondergingen, rapporteerden artsen die hadden deelgenomen aan coaching een toename in de hulpbronnen, psychologisch kapitaal, zelfcompassie, en autonomie, en een afname in taakeisen en uitputting. Deze resultaten onderschrijven de effectiviteit van coaching als veranderinterventie en bevestigen dat de resultaten van eerdere effectiviteitsstudies ook geldig zijn in de zorg.

In **Hoofdstuk 4** onderzocht ik de effecten van verschillende interventies, waaronder professionele ondersteuning door een coach of geestelijk verzorger, tijdens een periode van verhoogde stress. Tijdens de COVID-19 pandemie beantwoordden artsen gedurende acht opeenvolgende maanden online vragenlijsten. Het doel hiervan was tweeledig: ten eerste wilde ik begrijpen hoe veranderingen in maandelijkse taakeisen, energiebronnen

en persoonlijke hulpbronnen samenhangen met maandelijkse uitputting en werkbevlogenheid, en ten tweede wilde ik nagaan wat de effecten van ondersteunende interventies op deze uitkomsten zijn. De resultaten bevestigen de stress- en motivatieprocessen van het JD-R model, dit keer 'binnen' (in plaats van 'tussen') personen onderzocht. In maanden waarin mensen meer werkdruk ervoeren, rapporteerden ze ook meer uitputting. Eveneens rapporteerden ze in maanden waarin ze meer hulpbronnen ervoeren ook meer bevlogenheid. De resultaten lieten ook zien dat de relatie tussen werkdruk en uitputting zwakker werd in maanden waarin artsen meer psychologisch kapitaal en autonomie ervoeren, maar sterker werd in maanden waarin ze meer positieve feedback en ondersteuning van collega's kregen. Ten tweede wilde ik met mijn onderzoek meer inzicht krijgen in de effecten van interventies die vaak worden aangeboden aan professionals in de zorg. Ik vergeleek de effecten van een aantal interventies, waaronder professionele ondersteuningsinterventies zoals coaching en individuele ondersteuning van collega's of in groepsverband. Wie maakt gebruik van deze interventies en in hoeverre zijn ze nuttig? De resultaten—van de vergelijkingen tussen en binnen personen—toonden aan dat wanneer mensen meer taakeisen, minder hulpbronnen en meer uitputting ervoeren, ze meer geneigd waren om deel te nemen aan georganiseerde ondersteuningsinterventies, zoals gesprekken met een collega of professional. Deze resultaten laten zien dat artsen vooral gebruik maken van ondersteuningsinterventies op het moment dat hun uitputting al hoog is. Opmerkelijk is dat alleen professionele ondersteuningsinterventies samenhangen met een relatieve toename in werkbevlogenheid, terwijl de georganiseerde groepsbijeenkomsten met collega's juist samenhangen met een relatieve toename in uitputting. Hoewel onverwacht, deze laatste bevinding komt overeen met de bevinding dat ondersteuning door collega's het verband tussen werkdruk en uitputting versterkte.

Al met al benadrukken deze bevindingen dat (bepaalde) hulpbronnen belangrijk zijn voor het goed kunnen functioneren van mensen in stressvolle situaties en functies. Bovendien laten ze zien dat professionele ondersteuning doeltreffend kan worden ingezet om werknemers te ondersteunen in tijden van hoge werkdruk.

Hoofdstuk 5 richtte zich op een essentieel onderdeel van coaching: het stellen van vragen. Vragen zijn wellicht het fundament van coaching: ze kunnen aanzetten tot reflectie, inzicht en out-of-the-box denken en zo verandering bij de cliënt in gang zetten. In een experiment waarin deelnemers een zelf-coaching schrijfopdracht uitvoerden vergeleek ik de effecten van twee soorten coaching vragen: oplossingsgerichte vragen en probleemgerichte vragen. Oplossingsgerichte vragen stimuleren cliënten na te denken over mogelijke oplossingen voor een moeilijke situatie of een probleem terwijl probleemgerichte vragen cliënten stimuleren na te denken over het probleem zelf. De resultaten van dit experiment lieten zien dat wanneer deelnemers moesten nadenken over oplossingen in plaats van problemen, ze positiever gestemd raakten, minder negatieve gevoelens rapporteerden, en beter wisten welke doelen ze wilden nastreven. Beide soorten coaching vragen waren echter even effectief voor het plannen en uitvoeren van actiestappen tijdens een korte follow-up periode. Opmerkelijk was dat alle deelnemers, dus ongeacht of ze oplossingsgerichte of probleemgerichte vragen hadden beantwoord, na de schrijfopdracht een toename in het behalen van hun doelen rapporteerden. Het lijkt erop dat oplossingsgerichte coaching vragen vooral nuttig zijn wanneer de coaching gericht is op het versterken van positieve gevoelens en de motivatie van cliënten. Voor het stimuleren van doelgericht gedrag zijn ze echter net zo effectief als probleemgerichte coaching vragen. Deze resultaten tonen aan dat verschillende coaching vragen tot verschillende uitkomsten kunnen leiden. Ze laten echter ook zien dat uitgebreide coaching niet altijd nodig is voor het in gang zetten van verandering, maar dat coaching soms ook kort en krachtig kan zijn, zoals het geval was bij de schrijfopdracht.

Conclusies en Implicaties

Dit proefschrift biedt aanknopingspunten voor een effectieve gezondheidsbevordering van artsen. In lijn met het JD-R model (Demerouti et al., 2001) bleken hulpbronnen van essentieel belang voor het welzijn en functioneren van artsen (Hoofdstukken 2, 3 en 4). Persoonlijke hulpbronnen,

zoals psychologisch kapitaal, zorgen ervoor dat mensen grip hebben op hun werk en de eisen die hieruit voortkomen. Door een dergelijk gevoel van controle zijn taakeisen beter beheersbaar en ervaren mensen meer werkmotivatie. Hoewel hulpbronnen de relatie tussen werkbelasting en stress konden verzwakken (Hoofdstuk 4) en konden bijdragen aan werkbevlogenheid en welzijn (Hoofdstukken 2 en 4), werd ook duidelijk dat niet alle soorten hulpbronnen voor iedereen (Hoofdstuk 2) en op elk moment (Hoofdstuk 4) nuttig waren. Soms pakten hulpbronnen zelfs negatief uit, zoals het geval was bij het krijgen van positieve feedback en ondersteuning van collega's (Hoofdstuk 4). Voor het vinden en versterken van hulpbronnen die effectief zijn, is het belangrijk dat artsen niet 'one size fits all' oplossingen krijgen aangereikt, maar dat deze worden afgestemd op de individuele behoeften van artsen en de omgeving waarin zij werken. Wat de één helpt, helpt niet noodzakelijk een ander.

Coaching is een interventie die voldoet aan deze vraag naar maatwerk omdat het volledig is afgestemd op de behoeften van cliënten. De resultaten in dit proefschrift laten zien dat coaching het welzijn en functioneren van artsen kan ondersteunen. Coaching kan cliënten helpen hun hulpbronnen te versterken waardoor burn-outsymptomen worden verminderd of mogelijk worden voorkomen (Hoofdstuk 3). Door coaching makkelijk en preventief—in plaats van alleen curatief (zoals bij een dreigende burn-out)—toegankelijk te maken voor artsen en te integreren in de organisatiecultuur kan het welzijn van zorgverleners duurzaam worden bevorderd. Tot slot kunnen ook zelf-coaching en reflectie, zelfs als ze niet door een professionele coach worden gefaciliteerd, artsen helpen bij het navigeren van hun loopbaan en het in gang zetten van veranderingen (Hoofdstuk 5). Hoewel de bevindingen van mijn onderzoeken veelbelovend zijn en aangeven dat coaching een essentiële rol kan spelen in de gezondheidsbevordering van artsen, is coaching weinig meer dan een doekje voor het bloeden als systematische veranderingen op het gebied van werkdruk en cultuur in organisaties uitblijven.

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PORTFOLIO

	Year
Courses	
Longitudinal Research in Organizational and Social Psychology, Kurt Lewin Institute	2020
Mplus, University of Sheffield	2020
Scientific Integrity, Erasmus Medical Center	2021
Conferences	
International Conference on Mindfulness	2018
Coaching in Leadership and Healthcare, Institute of Coaching	2018
KLI Conference, Kurt Lewin Institute	2018/2022
NVMO Conference, Nederlandse Vereniging voor Medisch Onderwijs	2018/2022
AMEE Conference, Association of Medical Education in Europe	2019
NOBCO Symposium, Nederlandse Orde van Beroepscoaches	2019/2021-2022
WAOP Conference, Working Community of Work and Organizational Psychology	2019/2022
EAOHP Conference, European Academy of Occupational Health Psychology	2020/2022
Small Group Meeting *Employee Well-Being Initiatives in the New Normal,* Working Community of Work and Organizational Psychology	2021
Early Career Summer School, European Association of Work and Organizational Psychology	2022
Dutch HRM Network Conference	2022

Teaching

Supervision of bachelor theses	2018-2019
Supervision of master theses	2019-2022
Working group *Work, Stress, and Health*	2018-2020
Working group *Interventions in Occupational Health Psychology*	2019-2020
Working group *Working in Groups*	2020

Lara Solms

Coaching for Better Physician Well-Being

Working in healthcare is extremely stressful. Patient suffering, excessive workloads, and time pressure are the norm, leaving many physicians on the brink of burnout. Feeling mentally and physically exhausted, burnout hurts physician well-being and puts patient safety at risk. Professional coaching, a short-term, tailored, and goal-focused intervention, can help protect physician well-being and functioning. This dissertation presents the findings from four empirical studies providing new insights into effective strategies to support the well-being of physicians.

A cross-sectional study indicated that job and personal resources are essential for physicians' well-being, but their effects vary across career stages. An intervention study showed that professional coaching could successfully activate such resources and foster the well-being of physicians. A longitudinal study contributed to a better understanding of providing support during elevated stress. It showed that some types of support are ineffective and may even have adverse effects. The final study that zoomed in on the coaching process provided insights into the role of questioning techniques as a mechanism underlying successful coaching.