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INTERPERSONAL ASPECTS OF LEADERSHIP AND IMPLICATIONS FOR HEALTH AND WELL-BEING

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For my parents - Thank you for always believing in me, and supporting me in any way possible!

Ich habe euch lieb.

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Σ‘ αγαπάω. Για πάντα.

Finally I extend a warm thank you to my supervisor for his support, creative ideas, surprising perspectives, and the impulse to regard statistical methods as more than a means to an end.

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0.1 Abstract

This dissertation explores the effects of interpersonal aspects of leadership on leader and follower work-related well-being. More specifically, unique combinations of leader and follower characteristics are examined in interaction, to determine their impact on emotional exhaustion and work engagement. This approach integrates relational as well as trait theories of leadership, and connects to research on occupational health via the application of relevant models and outcome variables. This dissertation is unique in its consideration of both leader- and follower- centered perspectives, and offers several important contributions to theory and practice. In two empirical studies, the mutual influence of leaders and followers is examined in reference to job demands-resources theory. The results demonstrate that both leaders and followers can constitute a job-related demand or resource for each other, depending on the combination of their individual characteristics. Traits, i.e. narcissism and emotional self-efficacy, as well as psychological well-being, i.e. emotional exhaustion and work engagement have been examined, and were related to the outcome variables. A qualitative literature review with a focus on the health of organizational leaders complements the empirical findings by emphasizing the relevance of interpersonal factors for employee health. The different levels of examination, i.e. team, intra-individual, inter-individual, as well as the different paths of influence, i.e. from leader to follower and from follower to leader, that have been considered throughout this dissertation are reflected in the respective research methods. In line with recent advancements in methodological standards, multi-level design and analyses have been applied in cross-sectional as well as longitudinal settings, together with a qualitative addition, the literature review.

0.2 Zusammenfassung

In dieser Dissertation werden interpersönliche Aspekte von Führung und deren Auswirkung auf das arbeitsbezogene Wohlbefinden von Führenden und Geführten betrachtet. Dabei wird die Interaktion spezifischer

Merkmalskombinationen, welche Führende und Geführte kennzeichnen, im Hinblick auf deren emotionale Erschöpfung sowie Arbeitsengagement untersucht. Dieser Ansatz integriert beziehungs- und persönlichkeitsorientierte Führungstheorien und verbindet diese mit dem Forschungsbereich der arbeitsbezogenen Gesundheit durch die Anwendung relevanter Modelle und Ergebnisvariablen. Die gleichzeitige Betrachtung der Perspektiven von Führenden als auch Geführten, ist ein Alleinstellungsmerkmal dieser Arbeit und bedingt unter anderem deren theoretischen und praktischen Beitrag. In zwei empirischen Studien wird die gegenseitige Beeinflussung von Führenden und Geführten im Rahmen der Job Demands-Resources Theorie untersucht. Die Ergebnisse zeigen, dass Führende und Geführte, in Abhängigkeit ihrer jeweiligen Charakteristika, eine arbeitsbezogene Anforderung oder Ressource füreinander darstellen können. Spezifisch werden die Persönlichkeitsmerkmale Narzissmus sowie emotionale Selbstwirksamkeit als auch das psychologische Wohlbefinden in Form von emotionaler Erschöpfung und Arbeitsengagement mit den Ergebnisvariablen in Zusammenhang gebracht. Eine qualitative Literaturübersicht mit dem Fokus auf die Gesundheit von Führenden, ergänzt die vorliegenden empirischen Ergebnisse, da auch hier die Relevanz interpersönlicher Faktoren im Zusammenhang mit arbeitsbezogener Gesundheit deutlich wird. Die unterschiedlichen Forschungsmethoden, welche in dieser Arbeit angewendet werden, spiegeln die diversen Untersuchungsebenen (Team, intrapersönlich, interpersönlich) und Effektrichtungen (von Führenden zu Geführten sowie von Geführten zu Führenden) wider. Entsprechend aktueller methodischer Standards kommen in dieser Arbeit Mehrebenendesigns und –Analysen in querschnittlicher als auch längsschnittlicher Form zum Einsatz. Diese werden durch den qualitativen Ansatz der Literaturübersicht ergänzt.

1. Interpersonal Aspects of Leadership and Implications for Health and Well-being

"Hell is other people" (Jean-Paul Sartre, 1945)

"[...] social relationships are the strongest, most consistent predictor there is of a happy life" (Ruth Whippman, 2016)

In his famous drama *No Exit* Sartre describes a version of hell as a hotel room, where three characters are doomed to spend their eternal afterlife in each other's company. Contrary to their expectations, they do not face physical harm. Rather, their torture manifests itself in their mutually unanswered desires, unmet needs for recognition and lack of trust. The quote *hell is other people* pinpoints the negative, even unbearable, outcomes that the presence of others can inflict upon us (Sartre, 1957). Opposed to this are findings from social and psychological research on happiness, which identify our relations with other people as a strong, consistent predictor of happiness (Whippman, 2016). These two perspectives provide a powerful image to frame this work: The potency of interpersonal interaction and its impact on human well-being.

One context that allows the examination of interpersonal interaction is the workplace. Here, different individuals are bound together by their respective organizations to spend a substantial amount of their time in interaction with each other. The quality of social exchanges at work has been shown to impact employees' well-being in both negative and positive ways (Dutton & Heaphy, 2003; Richter, Dajana, Rau, & Schütte, 2014). Specifically, psychosocial factors at work have been shown to be related to mental health (Romanov, Appelberg, Honkasalo, & Koskenvuo, 1996; Stansfeld & Candy, 2014), depression (Bonde, 2008), as well as cardiovascular disease (Eller et al., 2009).

One interpersonal relationship that is of particular importance in a work setting, is the relationship between leaders and their followers (Bono & Yoon, 2012). Due to differences in power, hierarchical standing, and resources, mutual dependencies evolve (Graen & Uhl-Bien, 1995) that make the im-

pact, leader-follower relations have on the involved individuals, especially meaningful. Depending on the nature of this relationship, i.e. positive (Bono & Yoon, 2012) or negative (Tepper & Almeda, 2012), congruent outcomes on individuals' well-being have been demonstrated (Skakon, Nielsen, Borg, & Guzman, 2010; Wong & Kelloway, 2016).

The focus of this dissertation lies on the mutual influence leaders and followers exert on each other. I regard leadership through the lens of social interaction, and test the assumption that leaders and followers can constitute a work-related resource or demand (Bakker & Demerouti, 2014) for each other. More specifically, I investigate how particular combinations of leader and follower characteristics impact employees' work-related well-being. An emphasis is put on the mutuality of influence between leaders and followers, and health outcomes on both levels, i.e. followers and leaders.

This dissertation makes several important theoretical contributions. First, leadership is examined as a social interaction process with an impact on followers' *and* leaders' work-related well-being. The idea, that leaders and followers *commonly* shape their work-related environment, challenges and extends existing models on leadership. At the same time, findings on individual differences examined in this context, connect to trait theory, a long-standing theoretical approach to leadership with mixed evidence. The results included in this dissertation show, that individual differences related to emotional processing and control, i.e. narcissism and emotional self-efficacy, play a particularly important role with regard to interpersonal interaction in a leadership context.

Second, by featuring one of the first studies to examine crossover effects of emotional exhaustion and work engagement from followers to leaders in a longitudinal design, this dissertation emphasizes the importance of considering followers' role in the leadership process, particularly when it comes to leaders' health. The necessity of examining health outcomes on a leader level is addressed, and a systematic review on antecedents of leaders' health points out an important gap in the current literature: the need to

examine health-predictors that apply specifically to the leadership role (i.e. specific combinations of demands and resources leaders are faced with).

Finally, different findings related to the outcome variables (emotional exhaustion and work engagement) indicate, that, while interpersonal interactions generally appear to influence individuals' work-related well-being, motivational and health-hampering processes work differently, and thus have to be differentiated in theory and practice. Overall this dissertation offers a synthesis of leadership and occupational health theories and encourages the perspective that leaders can pose a work demand or resource to their followers and vice versa.

In terms of practical implications, this dissertation provides evidence-based insights and levers to improve leadership and organizational health management. First, it is shown, that individual differences can be a source of engagement or exhaustion for both leaders and followers, thus prompting towards the importance of individual development measures such as coaching or emotion management to help employees adapt their perceptions and ultimately their behavior.

Second, and more importantly, this dissertation offers indications on how to create sustainability in terms of employee health: With a systemic perspective considering the active roles of both followers and leaders in shaping their work environment, practitioners can make a first step towards keeping their employees healthy, and fully realizing their organization's potential. Concrete measures such as employee assistance programs, coaching, and conflict management are discussed.

The core of this dissertation consists of three research reports, which address interpersonal aspects of leadership as well as employee health from different perspectives. A common context is provided by the following description of how leadership theory evolved over time. Followed by the integration of theoretical approaches with current trends as well as the introduction of a theoretical framework, the unique perspective of this dissertation is delineated.

1.1 Leadership Research Across Time

The subject of leadership is a very complex one, as various levels of examination (e.g. the leader, leader-follower dyads, individual followers, the team) and directions of influence (e.g. from the leader to the team, from the team to the leader) can impact effects and quality of leadership (Fischer, Dietz, & Antonakis, 2016). This is reflected by a number of different theoretical approaches. Looking at the development of leadership research across time, five major paradigms have been described: traits, behavior, contingencies, relationships, and transformation. Further, research bodies on cognitive as well as biological aspects of leadership exist (Day & Antonakis, 2012).

One of the earliest approaches to leadership research were trait theories. While researchers believed in the heritability of leader attributes (Galton, 1869), it was challenging to reliably predict leaders' emergence or performance solely based on certain traits (Mann, 1959; Stogdill, 1948). It was not until much later that this line of research was revived by re-examination of earlier evidence (Lord, De Vader, & Alliger, 1986), as well as the development and employment of the big five personality model in a leadership context (Judge, Bono, Ilies, & Gerhardt, 2002; Peterson, Smith, Martorana, & Owens, 2003).

Subsequently to the trait approach, the Ohio State (Hemphill & Coons, 1957) as well as the Michigan (Likert, 1961) leadership studies were very influential in shaping research on leader behavior. The main contribution of this body of research was the identification of behavior patterns related to effective leadership, such as. *consideration* and *initiating* structure. Consideration manifests itself in equal and fair treatment of followers with a focus on building positive relationships. Initiating structure consists of giving clear directions, managing expectations, and providing a clearly organized work environment. While both consideration and initiating structure are related to positive leadership outcomes such as follower satisfaction and performance (Judge, Piccolo, & Ilies, 2004), the realization that a given behavior was not necessarily successful in any given situation, led leadership research to evolve further.

Contingency theories of leadership postulated that leadership success depended on situational contingencies. For example, the success of a task- or relationship-oriented leadership style was hypothesized to depend upon the amount of power a leader has, the kind of task a leader performs, and the amount of trust a team has in their leader (Fiedler, 1967). Compared to the assumption that leadership styles remain stable across situations, path-goal theory (House, 1971, 1996) introduced the notion that leaders can flexibly adapt their style to a given situation in order to support followers' goal achievement. Next to leadership styles, leaders' decision making (Vroom & Yetton, 1973), was examined in combination with situational contingencies such as information availability, or follower acceptance. Decision-making was characterized based on the amount of follower involvement leaders would allow (from autocratic to shared). The success of certain decision styles was tied to the respective context. For example, leaders can only make a successful autocratic decision if they have access to relevant information.

While leader-follower relations were considered as contingencies in the models described above, e.g. trust in leader (Fiedler, 1967) or acceptance of leaders' decision-making (Vroom & Yetton, 1973), another stream of leadership research evolved, focusing exclusively on leader-follower relations. Originating from the vertical dyad linkage model (Dansereau, Graen, & Haga, 1975), leader-member-exchange theory (Graen & Uhl-Bien, 1995), examined the leader-follower relationship as a mutual exchange of resources between leaders and followers. The theory states that each relationship leaders have with their individual followers is unique, and the relationship quality evolves over time, depending on the amount of resources, e.g. praise, trust, tasks, engagement, that are being exchanged.

Following the theory on leader member exchange, researchers put again a strong focus on the description of behaviors and characteristics related to effective leadership. Charismatic leadership theories for example (Conger & Kanungo, 1987, 1998; House, 1977) attributed leaders' motivational abilities to a unique attribute, or *charisma* (Greek = divinely inspired gift), that implied extraordinary abilities beyond average human performance, and al-

lowed charismatic leaders to exert an influence on followers beyond formal authority.

Other approaches such as transformational leadership or the full range of leadership model focused on successful leadership behaviors. According to transformational leadership theory (Bass, 1985), idealized influence, inspirational motivation, intellectual stimulation and individualized consideration, set a motivational process in motion associated with enhanced follower performance (Wang, Oh, Courtright, & Colbert, 2011). Idealized influence can be understood as leader behaviors targeted at followers' believes and values. Inspirational motivation is the degree to which a leader manages to inspire and engage followers. Intellectual stimulation refers to a leaders' encouragement of followers' intellect and critical reasoning. Finally, individualized consideration is the degree to which a leader pays attention and caters to followers' individual needs. The key aspect of this approach is the motivational process that needs to be differentiated from contingent reward and punishment described in transactional leadership theory (Judge & Piccolo, 2004). Transformational leadership was further developed into the full range of leadership model (Bass & Avolio, 1990) consisting of transformational, transactional and laissez-faire leadership. Again, certain leadership behaviors were related to leadership effectiveness. Next to the four transformational behaviors described above, transactional behaviors focused on contingent reward as well as active and passive management-by-exception. Contingent reward consists of positive affirmations by the leader of desired follower behaviors. Management-by-exception denotes leader interventions prior to or in reaction to undesired follower behaviors. Laissez faire leadership can be characterized as the absence of any leadership behaviors. While the description of these behaviors is extremely valuable in the sense that they have been related to relevant leadership outcomes, they remain descriptive and provide little information about the underlying processes causing leadership success.

Finally, biological and cognitive approaches have made important contributions to leadership research. To some extent they can be subsumed to the categories described above. The biological approaches to leadership for

example, are closely related to the trait approach, only that measurements are taken based on biological indicators rather than psychometric instruments (Van Vugt, 2011). The cognitive, or information-processing approach, examines leadership as a function of follower perceptions (Schyns & Schilling, 2010; van Gils, van Quaquebeke, & van Knippenberg, 2010), and thus is related to the relational approach to leadership.

The five theoretical approaches to leadership described above, i.e. trait, behavioral, contingency, relational, and transformational, mark major paradigms in leadership research (Day & Antonakis, 2012), and continue to inspire present developments. Looking at the landscape of leadership research today, current trends that can be observed include complex modeling, e.g. interactions, processes, multi-level relationships (Croon, Van Veldhoven, Peccei, & Wood, 2014; Fischer et al., 2016), bright-side / dark-side phenomena (Judge, Piccolo, & Kosalka, 2009; Watts et al., 2013), followership (Uhl-Bien, Riggio, Lowe, & Carsten, 2014), as well as leadership and health (Barling & Cloutier, 2017; Franke, Felfe, & Pundt, 2014).

One aspect that all of these new approaches have in common is enhanced complexity in terms of relationships and outcomes. For example, rather than focusing solely on the positive aspects and behaviors of leadership, as has been the case in the past, researchers acknowledge and address negative outcomes as well. More specifically, they acknowledge the duality of leadership phenomena. Further, the development and deployment of sophisticated statistical methods, allows complex modeling of various effects on different levels. This way, leadership is not solely examined as a linear path of influence from leader to follower, but includes reverse relations as well as contextual and multi-level (e.g. team and organizational) effects. Finally, leadership is not only regarded in the light of enhanced performance and effectiveness, but researchers examine health and well-being in the leadership context, adding a different dimension of outcome variables.

This dissertation integrates several of the theoretical perspectives described above and builds on current trends. First and foremost, leadership is examined as a social interaction process between leaders and followers, thus

referencing the relational approach to leadership. By looking at leadership as social interaction process, this dissertation goes beyond the sole description of leadership behaviors and contributes to a more holistic understanding of the complex processes involved in leader-follower relations. Second, referring to one of the first leadership theories, the trait approach, the impact of individual differences is examined in the context of social interaction. Further, the criterion variables examined in this dissertation reflect the current trend for more sustainability in organizational research, i.e. a psychologically sound and healthy workforce. Finally, the research designs and statistical analyses applied in this work are in line with the latest methodological developments.

I will elaborate on these claims in the following paragraphs. The relevance of interpersonal interaction in leadership and its relation to employee health will be explained in more detail, and an important theoretical framework for this dissertation, job demands resources theory (Bakker & Demerouti, 2014), is introduced. Finally, an overview of the research questions is given.

1.2 The Heart of Leadership – Interpersonal Interaction

The subject of this dissertation lies at the intersection of the relational and the trait approach to leadership. The combination of these perspectives was chosen for several reasons. First and foremost, I believe that the nature of leadership is inherently interpersonal. Because what separates an organizational leader from other professionals, is the authority over (Raven, Schwarzwald, & Koslowsky, 1998) and responsibility for others, which calls for regular interaction and exchange. In order to reach organizational and individual targets, leaders need to connect with and influence their team members, e.g. by steering meetings, mitigating conflicts of interest, or motivating their followers. This act of influence has been theoretically described in various ways from relation-oriented leadership (Likert, 1961), over leader-member exchange (Graen & Uhl-Bien, 1995), to transformational leadership (Bass, 1990).

What is missing in these frameworks, however, is the recognition of leadership as a social interaction process between two parties. The above-mentioned approaches are very leader centric, and do not sufficiently consider the role of the follower (Uhl-Bien et al., 2014), which has been shown to be crucial (Markham, Yammarino, Murry, & Palanski, 2010) when examining leader-follower exchanges. Moreover, by emphasizing the influence exuded by the leader, they do not account for the basic interaction that ensues between two human beings – regardless of their hierarchical position.

The power of social interaction has been demonstrated early on in psychological research. For example, individuals' performance (Zajonc, 1965; Zajonc & Sales, 1966) or affect (McIntosh, Druckman, & Zajonc, 1994) can be influenced by the mere presence or absence of others. Further, individuals can acquire new behaviors simply by observing and imitating others (Bandura, 1971). Considering how even a passive interaction can influence and shape individuals' behavior, these effects multiply in a leadership context, where behavioral changes are intentionally targeted. Further, this approach emphasizes the social exchange process, rather than solely describing effective or ineffective leader behaviors. Looking behind the organizational roles of leader and follower, individual differences can play a major role in how individuals perceive each other, and their mutual relationships at work (Brouer & Harris, 2007).

1.2.1 The role of individual differences

As stated previously, individual differences are an integral part of early leadership theories. The trait approach to leadership has won new support and attention, particularly since the Big 5 personality dimensions have been applied in an organizational context. Recently, organizational researchers have looked further at the role of more narrow traits. With regard to leadership, most notably bright side and dark side traits have been under investigation.

On the bright side, concepts such as emotional intelligence, emotional self-efficacy, or more generally, traits related to the identification, inter-

pretation, and control of emotions at work have received notable attention (Mayer & Salovey, 1993; Mayer, Salovey, Caruso, & Sitarenios, 2003). Since the 1990s, researchers are debating whether individual differences related to the recognition and management of own and others' emotions constitute indeed a trait, some form of intelligence, or rather an ability (Petrides & Furnham, 2001). Those differences manifest themselves mainly in the respective methodological operationalization. While ability theorists use maximum performance (Mayer et al., 2003), or situational judgment tests (MacCann & Roberts, 2008; Matthews, Zeidner, & Roberts, 2012), trait theorists rely on behavior-based self-reports (Austin, Saklofske, Huang, & McKenney, 2004; Petrides & Furnham, 2003). Others assess emotional *self-efficacy*, and thus individuals' believe in their ability to recognize and manage emotions (Loeb, Stempel, & Isaksson, 2016).

Regardless of these conceptual difficulties, leaders' emotional display and regulation has been associated with relevant organizational outcomes (see Rajah, Song, & Arvey, 2011 for a review). For example, emotionally perceptive leaders have been found to inspire higher performance in their staff, particularly, when their tasks were interdependent (Vidyarthi, Anand, & Liden, 2014). Further, leaders' display of different emotions has been found to enhance followers' creative or analytical performance (Visser, van Knippenberg, van Kleef, & Wisse, 2013). Emotional intelligence has been associated with the transformational leadership behaviors idealized influence, inspirational motivation, and individualized consideration (Barling, Slater, & Kelloway, 2000). And the ability to adequately recognize emotions has been found to facilitate transformational leadership behaviors, especially in highly extravert individuals (Rubin, Munz, & Bommer, 2005).

On the dark side of leadership, traits of the *dark triad*, i.e. narcissism, psychopathy and machiavellianism have been examined, all three marked by strong implications for the establishment and maintenance of social relationships (e.g. lack of empathy, abuse of power, charisma, feelings of entitlement). Particularly (sub-clinical) narcissism is fascinating in this regard, as it appears to have both positive and negative effects. On the one hand, narcissists make positive first impressions (Back, Schmukle, & Egloff, 2010), eas-

ily emerge as leaders (Brunell et al., 2008; Nevicka, De Hoogh, Van Vianen, Beersma, & McIlwain, 2011), perform well in organizational settings in terms of crisis management, public persuasiveness or agenda-setting (Watts et al., 2013), and are compensated more generously than their non-narcissistic peers (O'Reilly, Doerr, Caldwell, & Chatman, 2014). On the other hand, their behavioral preferences and attitudes have negative implications on integrity, interpersonal performance (Blair, Hoffman, & Helland, 2008; Rosenthal & Pittinsky, 2006), contextual performance, and workplace deviance (Judge, LePine, & Rich, 2006).

The fact, that sub-clinical narcissism can manifest itself in different dimensions, i.e. grandiose and vulnerable (Wink, 1991), makes this construct even more interesting. The main difference between grandiose and vulnerable narcissism is the self-concept of the respective individual. While grandiose narcissists are absorbed by their overly positive and grandiose self-image, vulnerable narcissists have a fragile sense of self-esteem that is easily threatened by others. However, both continuously strive to enhance their self-esteem, often via interpersonal regulation (Morf & Rhodewalt, 2001) at the cost of others (Morf & Rhodewalt, 1993; Stucke & Sporer, 2002). It is important to note in this regard, that narcissists tend to use social relationships to affirm and maintain their positive self-image or exert power without any interest in building or sustaining intimate relationships (Carroll, 1987).

Overall both narcissism and emotional self-efficacy have interpersonal implications that warrant their close examination in a leadership context. While the lack of empathy, egotism and – depending on the type of narcissism – patterns of grandiosity or vulnerability are likely to cause negative exchanges between narcissistic leaders and followers, emotional self-efficacy may lead to a more considerate exchange.

This dissertation contains two studies (chapters 2.1 and 2.2) that separately examine the role of narcissism and emotional self-efficacy for leaders' and followers' well-being, and thus address the role of individual differences in shaping social relations in a leadership context. Integrating the trait and the relational approach to leadership, leaders' and followers' characteristics,

and more importantly, the interplay of the two, are examined with a focus on well-being and health outcomes.

1.3 Leadership Outcomes – From Effective to Healthy

A topic of current interest in leadership research is leadership and health, or the question of how leaders can impact the health of their followers (Dellve, Skagert, & Vilhelmsson, 2007; Rigotti et al., 2014). Leadership approaches with an exclusive focus on health-promotion have been developed, and found to predict variance in follower health (e.g. Eriksson, Axelsson, & Axelsson, 2010; Franke et al., 2014; Vincent, 2012). Further, studies examining established leadership concepts as a lever to promote employee health (Kuoppala, Lamminpää, Liira, & Vainio, 2008), found different routes of impact, i.e. a direct and an indirect one via different mediating factors (Wegge, Shemla, & Haslam, 2014).

Direct links between leadership and follower health include positive and negative relationships. For example, leaders' considerate behavior, support, empowerment, and communication (Gurt, Schwennen, & Elke, 2011) have been related to lower follower stress (Nyberg, Bernin, & Theorell, 2005; Skakon et al., 2010). Transformational leadership has been related to decreased burnout (Hetland, Sandal, & Johnsen, 2007; Kanste, Kyngäs, & Nikkilä, 2007), decreased depressive symptoms (Munir, Nielsen, & Gomes Carneiro, 2010), and increased sleep quality (Munir & Nielsen, 2009). Further, negatively perceived supervisory interactions have been related to enhanced blood pressure in followers (Wong & Kelloway, 2016). Abusive supervision, i.e. "the sustained display of hostile verbal and nonverbal behaviors, excluding physical contact" (Tepper, 2000, p. 178), has been related to followers' enhanced distress (Tepper, 2000; Tepper, Moss, Lockhart, & Carr, 2007), emotional exhaustion, depersonalization, and reduced personal accomplishment (Wu & Hu, 2009; Yagil, 2006).

Other studies demonstrate an indirect link of leadership on follower health in that leaders shape followers' work environment or job characteristics, which in turn impact their well-being. Transformational leadership for example, has been indirectly linked to follower health via job characteristics such as meaningfulness of work (Arnold, Turner, Barling, Kelloway, & McKee, 2007), role clarity, development opportunities (Nielsen, Brenner, Randall, Yarker, & Brenner, 2008), or organizational justice (Walsh, Dupre, & Arnold, 2014). Further, laissez-faire leadership has been indirectly linked to followers' distress via role ambiguity, as well as role and co-worker conflict (Skogstad, Einarsen, Torsheim, Aasland, & Hetland, 2007).

Leadership style is not only related to follower health, but also has an impact on those in the lead. For example, Zwingmann, Wolf, and Richter (2016) found leaders' transformational style to be negatively related to leaders' emotional exhaustion in a cross-sectional, yet positively related to leaders' emotional exhaustion in a longitudinal design (24 months). Laissez-faire leadership was positively related to emotional exhaustion both cross-sectionally and longitudinally. The authors explain their findings using the conservation of resources theory (Hobfoll, 1989, 2001). They state that while transformational leadership enhances leaders' resources in the short term (Wegge et al., 2014), the cost of maintaining transformational leadership behaviors over time (i.e. loss of personal resources) eventually outweighs the short term benefits and can lead to enhanced emotional exhaustion. Laissez-faire leadership appears to cause immediate and long-term resource loss spirals.

Not only leaders' behavior is important in terms of well-being outcomes – followers can make a difference as well. For example, positive relationships between leaders and followers have been shown to be positively related to leaders' work engagement (Warshawsky, Havens, & Knafl, 2012), and a positively rated leader-member exchange has been linked to reduced stress in leaders (Bernerth & Hirschfeld, 2016). Upward undermining (Duffy, Ganster, & Pagon, 2002), consisting of followers' negative affect towards the leader, negative evaluation of the leader, and interference with the leader's

instrumental goal attainment (Vinokur, Price, & Caplan, 1996), has been related to leaders' experience of interpersonal stress (Deluga, 1991).

Addressing the importance of employee health for the well-being of the individual, as well as high performing and most importantly, sustainable organizations, this dissertation focuses on the well-being of leaders and followers. While broader predictors of the health of organizational leaders are considered in the form of a qualitative literature review, the central outcome variables examined in this dissertation are emotional exhaustion and work engagement.

These two variables were chosen for several reasons. First, they represent the duality of psychological well-being, i.e. a positive and a negative manifestation. While work engagement, characterized by a work-induced state of vigor, dedication and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002), is an indicator for positive mental well-being, emotional exhaustion, a feeling of depletion and fatigue, indicates negative mental well-being. Second, emotional exhaustion and work engagement as indicators of *work-related* wellbeing are tied to the organizational context (Bakker & Demerouti, 2007, 2014). This makes them especially relevant outcomes for this dissertation, which explicitly examines effects of leader-follower interactions at work.

Finally, both are early indicators of experienced strain. For example, looking at the process of the development of burnout, emotional exhaustion is amongst the first symptoms (Leiter & Maslach, 1988). This has both practical and empirical advantages. From a practical perspective, implications derived from the findings described here have a preventive character and contribute to the creation of a health-promoting work environment. From an empirical perspective, these outcomes match their respective predictors in strength or valence, as the context of this investigation is not a clinical one. Therefore, work-related interactions among individuals characterized by sub-clinical levels of individual differences should relate to sub-clinical levels of well-being, and thus make it more likely to detect significant effects.

1.4 Job-Demands-Resources Theory

When examining emotional exhaustion and work engagement, job-demands-resources (JD-R) theory (Bakker & Demerouti, 2014) provides a useful theoretical frame and is used throughout this dissertation across all three research reports. JD-R theory addresses antecedents of employees' mental well-being at work. More specifically, emotional exhaustion and work engagement are predicted by the interplay of job demands and job as well as personal resources.

Job demands constitute of physical, psychological, social or organizational aspects of any job that are experienced as challenging or demanding, whereas job resources contribute to employees' goal attainment, personal development, or the reduction of the physiological and psychological costs of high job demands (Bakker & Demerouti, 2007). Further, personal resources such as positive self-evaluations, feelings of competence and self-efficacy, are part of the model (Bakker & Demerouti, 2014). Personal resources have been shown to be reciprocally related to work engagement and job resources over time (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007, 2009).

JD-R theory has several distinguishing features, that contribute to its' applicability within the context of this dissertation. First, JD-R theory is flexible in the sense that it is valid for all types of jobs or working environments. The general distinction between the two categories of demands and resources can be applied from manufacturing jobs, to social work, to the leadership context (Bakker & Demerouti, 2014). Second, it describes two distinct processes: a health-hampering as well as a motivational process, thus considering the above-mentioned duality in psychological phenomena, which is one key aspect of this dissertation. Third, according to the model, demands and resources can interact in the sense that job resources can buffer job demands, and job resources become more salient under conditions of high demands (Bakker, Demerouti, & Euwema, 2005; Hakanen, Schaufeli, & Ahola, 2008). This is particularly useful, as this dissertation examines the consequences of leader-follower interactions on employee well-being. Thus, considering the interplay of positive as well as negative aspects (i.e. resources and demands)

of leader-follower exchanges at work. Finally, the role of personal resources is somewhat reflected in the investigation of individual differences in this dissertation. Overall, JD-R theory is used to test the assumption whether leaders and followers can constitute a demand or a resource for each other, causing emotional exhaustion or work engagement.

1.5 Overview of Research Questions

The main goal of this dissertation is the examination of the mutual influence and interaction between leaders and followers with an impact on their respective well-being, mainly their emotional exhaustion and work engagement. In reference to early theoretical approaches to leadership, namely the relational and the trait approach, social interaction is emphasized as a key characteristic of leadership, and examined in terms of combinations or *clashes* of different leader and follower characteristics. This dissertation addresses three main research questions:

(1) Is there a relationship between leaders' and followers' characteristics and followers' work-related well-being?

(2) What about leaders' work-related well-being - are followers' characteristics related to leaders' emotional exhaustion and work engagement?

(3) What are predictors of leaders' mental and physical health more generally?

2. Quantitative and Qualitative Research Reports

The three research questions are addressed in two empirical studies and one qualitative literature review, which are described throughout this chapter. First, in the cross-sectional multilevel study When grandiose meets

vulnerable: Narcissism and well-being in the organizational context, the impact of followers' characteristics as well as the impact of a combination of leader and follower characteristics on followers' work-related well-being is examined. Second, in the longitudinal multilevel study What about the leader? Crossover of work engagement and emotional exhaustion from followers to leaders, the relationship between leaders' and followers' characteristics as well as the role of leaders' characteristics is examined regarding the impact on leaders' work-related well-being. Finally, in the systematic literature review What makes healthy leaders?, 30 years of research on leaders' mental and physical health are synthesized to explore additional work-related predictors for leaders' work-related well-being and health.

All three reports adhere to high methodological standards. While the first study is distinguished through the multi-level design and analysis, the second study features multi-level design and data taken at two points in time. The qualitative literature review is characterized by a high number of search terms, a systematic evaluation procedure, as well as a quantitative dimension that was added to the qualitative results.

2.1 When Grandiose Meets Vulnerable: Narcissism and Well-being in the Organizational Context

2.1.1 Abstract

In this article, we explore the implications of vulnerable narcissism in an organizational context, particularly with regard to work-related well-being and leader-follower interactions. We tested whether employees' vulnerable narcissism affects their work engagement and emotional exhaustion. Further, we examined whether leaders' grandiose narcissism has an impact on those relationships. Multi-level analyses in a sample of 235 followers in 71 teams confirmed some of our hypotheses. We show that vulnerable narcissism is positively related to followers' emotional exhaustion and negatively to work engagement. Further, leaders' grandiose narcissism exacerbates the negative relationship between followers' vulnerable narcissism and their

work engagement. Interestingly, exploratory analyses revealed that leaders' well-being is affected by followers' levels of grandiose narcissism. Our results indicate that the different facets of narcissism play an important role in an organizational context and show that vulnerable narcissism in particular, which has been mostly neglected in previous research, is an important determinant of work-related well-being. Further, by emphasizing the interaction between leaders' and followers' personalities, we add to a leadership literature that integrates leader and follower characteristics to form a holistic understanding of the leadership process.

2.1.2 Introduction: When Grandiose Meets Vulnerable: Narcissism and Well-being in the Organizational Context

Narcissism in an organizational context has received increased research attention over the last few decades (see Campbell, Hoffman, Campbell, & Marchisio, 2011 for a review). The introduction of economic instruments measuring levels of narcissism in healthy subjects, as opposed to clinical populations (Ames, Rose, & Anderson, 2006; Hendin & Cheek, 1997), has amplified this development. Most organizational research has examined narcissism in relation to leadership, performance, or counterproductive work behaviors and found adaptive as well as maladaptive outcomes. For example, narcissism has been related to leadership emergence (Brunell et al., 2008; Nevicka, De Hoogh, Van Vianen, Beersma, & McIlwain, 2011), positive and negative indicators of leadership performance (Watts et al., 2013), and workplace deviance (Judge, LePine, & Rich, 2006). In part, this can be attributed to the multifaceted nature of this personality trait, consisting of grandiosity-exhibitionism and vulnerability-sensitivity (Wink, 1991).

Organizational researchers have thus far focused on grandiose narcissism, while vulnerable narcissism has been mostly ignored (see Watts et al., 2013 for an exception). We argue, however, that, particularly on the individual employee level, vulnerable narcissism has strong implications for work-related well-being. The aspect of narcissistic vulnerability has been linked to burnout and depression in both clinical (Schwarzkopf et al., 2016; Tritt, Ryder, Ring, & Pincus, 2010) and non-clinical samples (Sandage, Jankowski, Bisson-

ette, & Paine, 2017). However, studies examining vulnerable narcissism in an organizational context are missing. In this article, we built on past research connecting vulnerable narcissism with individual well-being. Further, we extend those findings by examining work-related well-being and by including a motivational outcome, i.e., work engagement, in our investigation. Moreover, we look at interpersonal implications of vulnerable narcissism for the relationship between leaders and followers.

Narcissism does not have implications only on an individual level. Particularly in the interpersonal domain, narcissistic characteristics play an important role in shaping relationships (Campbell, Brunell, & Finkel, 2006). The sense of entitlement, lack of interest in personal relationships (Carroll, 1987), and strong emotional reactivity (Rhodewalt, Madrian, & Cheney, 1998) are likely to cause (interpersonal) difficulties in work settings. This should become particularly problematic when two narcissists interact. We therefore included leaders' narcissism as a moderator of the relationships between followers' narcissism and their work-related well-being. Building on past research that has identified grandiose narcissism as particularly important in a leadership context (Grijalva, Harms, Newman, Gaddis, & Fraley, 2015) and considering the relevance of vulnerable narcissism for individual employee outcomes as described above, we examined leaders' *grandiose* and followers' *vulnerable* narcissism in interaction.

Our study offers several theoretical as well as practical contributions. We replicate and extend past research on narcissism in an organizational context. First, by focusing on vulnerable narcissism, we emphasize the relevance of this narcissism facet in work settings and answer calls for the consideration of the multifaceted nature of narcissism in organizational research (Campbell et al., 2011; Grijalva & Newman, 2015). Second, by examining work engagement as an outcome variable, we explore the role of narcissism in motivational processes, while previous research has focused on health-hampering effects (e.g., depression and burnout). Further, by introducing leaders' levels of grandiose narcissism as a moderator, we demonstrate the strong interpersonal implications of narcissism at work. Finally, our results offer in-

dications for occupational health management and personnel development practice.

2.1.2.1 Different facets of narcissism

Sub-clinical narcissism can be understood as a continuum (Foster & Campbell, 2007) within the normal range of individual differences and should be distinguished from clinical, categorical approaches (e.g., American Psychiatric Association, 2013). We apply the sub-clinical definition of narcissism throughout this article, which entails two different facets: grandiosity-exhibitionism and vulnerability-sensitivity (Miller et al., 2011; Wink, 1991), also referred to as grandiose and vulnerable narcissism.

It has been shown that grandiose and vulnerable narcissism have different correlates and are to be measured as distinct from each other (Hendin & Cheek, 1997). While grandiose narcissism is related to self-assuredness, aggression, self-enhancement, dominance, and exhibitionism, vulnerable narcissism is associated with low self-esteem, sensitivity, and feelings of inadequacy and incompetence. Both forms share a sense of entitlement, exploitative behavior, antagonism, and low levels of agreeableness (Miller et al., 2011; Wink, 1991).

The multifaceted nature of narcissism has not always been considered, particularly in studies within an organizational context. Here, the bulk of research has focused on grandiose narcissism (Campbell et al., 2011), mainly examining effects on leadership emergence and effectiveness (Grijalva et al., 2015). However, when looking at occupational health, vulnerable narcissism offers valuable explanations for individual well-being and may be better suited as a predictor than the grandiose manifestation.

2.1.2.2 Narcissism and work-related well-being

The inclusion of narcissistic personality disorder (NPD) in the *Diagnostic and Statistical Manual, V* (American Psychiatric Association, 2013), and the statement "only [...] when these traits cause significant functional impairment or subjective distress do they constitute NPD." (p. 672) in particular

implies a negative relationship between narcissistic traits and individual well-being. This is supported by findings relating pathological narcissism to depression (Tritt et al., 2010) and burnout (Barnett & Flores, 2016; Schwarzkopf et al., 2016).

However, looking at *sub-clinical* narcissism, this relationship is sometimes reversed. Here, grandiose narcissism has been positively related to dispositional and daily well-being and negatively to dispositional and daily measures of sadness, anxiety, depression, loneliness, and neuroticism (Sedikides, Rudich, Gregg, Kumashiro, & Rusbult, 2004). Further, adaptive aspects of grandiose narcissism (e.g., a positive self-image) have been negatively correlated with depression and anxiety, whereas maladaptive aspects (e.g., entitlement, exploitativeness) showed positive correlations (Watson & Biderman, 1993).

Constructs related to narcissists' self-concept, i.e., self-esteem (Rose, 2002; Sedikides et al., 2004), self-compassion (Barnett & Flores, 2016), and differentiation of the self (Sandage et al., 2016), have been found to mediate relationships between narcissism and well-being. While grandiose narcissism has been associated with higher self-esteem and well-being (Sedikides et al., 2004), vulnerable narcissism has been associated with lower self-esteem and well-being (Rose, 2002). The negative role of vulnerable narcissism is further emphasized by a study that identified (pathological) narcissistic vulnerability as a predictor of depression and anxiety, whereas (pathological) grandiosity was unrelated to those outcomes (Tritt et al., 2010). Overall, the evidence indicates positive effects of grandiose and negative effects of vulnerable narcissism on individuals' psychological health (Miller et al., 2011).

Vulnerable narcissism and emotional exhaustion

As we are examining sub-clinical levels of narcissism, we expected a somewhat weaker effect on individual health, as would be the case in a clinical population. To match the severity of predictor and outcome, we chose emotional exhaustion as an outcome variable. Emotional exhaustion is a primary indicator of job burnout (Lee & Ashforth, 1993b; Schaufeli & Van Dierendonck, 1993), and while positively related to depression, emotional

exhaustion is tied specifically to the organizational context (Leiter & Durup, 1994). According to job demands-resources theory (Bakker & Demerouti, 2014), an imbalance of job resources, personal resources, and job demands leads to emotional exhaustion over time.

Considering the central role of the narcissistic self-concept in the relationship between narcissism and well-being, we expect vulnerable narcissism to be an important predictor of emotional exhaustion. The work environment of today's organizations offers ample opportunity to offend the sensitive self-image of the vulnerable narcissist. According to the dynamic self-regulatory processing model of narcissism (Morf & Rhodewalt, 2001), narcissists constantly strive to enhance or maintain their fragile self-esteem. To do so, they engage in social-cognitive-affective strategies, relying on validation from external sources such as interpersonal contact or status symbols. Transferring this to the organizational context, once vulnerable narcissists are confronted with real or perceived setbacks, such as critical performance feedback or being assigned a small office, they will exert enhanced effort to obtain the outcome they feel they deserve. Trying to align their real with their ideal self, vulnerable narcissists exhaust additional resources, which likely leads to depletion and emotional exhaustion over time (Hakanen, Schaufeli, & Ahola, 2008). This process is reinforced by the fact that the narcissistic ideal is impossible to obtain (Morf & Rhodewalt, 2001), and cognitive biases (e.g., hostile attribution bias) lead vulnerable narcissists to generally interpret (neutral) situations to their disadvantage (Dodge, 1980; Miller et al., 2011). According to job demands-resources theory (Bakker & Demerouti, 2014), these individuals are thus prone to perceive more job demands (e.g., unfair treatment) and fail to recognize potential resources (e.g., social support from colleagues). Thus, our first hypothesis reads:

Hypothesis 1a (H1a): Followers' vulnerable narcissism is positively related to their emotional exhaustion.

Vulnerable narcissism and work engagement

While emotional exhaustion is tied to a lack of resources in combination with high demands, work engagement rep-

resents an antithetical, motivational process that can be achieved and maintained through a healthy demand-resource balance (Bakker & Demerouti, 2014). Work engagement is a positive, work-related state of vigor, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002) and an indicator of work-related well-being (Rothbard & Shefali, 2012).

Grandiose narcissism has been positively related to work engagement (Andreassen, Ursin, Eriksen, & Pallesen, 2012). The narcissistic need for achievement, recognition, and (career) enhancement could be a driving force behind this finding. Empirical evidence linking vulnerable narcissism to work-related well-being is missing. However, there are several theoretical considerations based on the nature of vulnerable narcissism, which lead us to propose a negative relationship to work engagement. The workplace can be a source to fulfill narcissists' craving for recognition (e.g., praise from superiors, promotion, public presentations). As previously described, however, the biased perception associated with narcissistic vulnerability (Miller et al., 2011) and the insatiability in terms of external validation (Morf & Rhodewalt, 2001) make it unlikely that vulnerable narcissists derive satisfaction from work. Further, if work is regarded solely as a means of need-satisfaction (e.g., status, job title), rather than being valued for its inherent purpose, the intrinsic motivational process should be suppressed (Gagne & Deci, 2005; Ryan & Deci, 2000).

While grandiose narcissists report a profound sense of (work-related) self-efficacy (Judge et al., 2006), vulnerable narcissists tend to ruminate about personal problems and perceived insults to their fragile self-esteem (Hendin & Cheek, 1997). This is further exacerbated by a positive correlation between vulnerable narcissism and neuroticism (Miller et al., 2011). The ego-centric preoccupation, particularly with negative events, that characterizes narcissistic vulnerability, leaves little room for positive experiences revolving around work (i.e., vigor, dedication, absorption).

Analogous to H1a, we argue that the negative perceptions of the work environment associated with vulnerable narcissism lead to an overestima-

tion of demands and an underestimation of resources (Bakker & Demerouti, 2014; Miller et al., 2011). As a result, the motivational process is interrupted and work-related well-being (i.e., work engagement) diminishes:

Hypothesis 1b (H1b): Followers' vulnerable narcissism is negatively related to their work engagement.

2.1.2.3 Interpersonal implications of vulnerable narcissism

As narcissism has strong implications for interpersonal interactions (Campbell et al., 2011; Morf & Rhodewalt, 2001), we deemed it important to add an interpersonal layer to our investigation. In particular, we examine how leaders' grandiose and followers' vulnerable narcissism interact to affect followers' work-related well-being. We chose to examine the interaction between leaders and followers rather than between peers, as the leader-follower relationship, characterized by mutual dependencies (Graen & Uhl-Bien, 1995), is of particular importance for followers (Bono & Yoon, 2012). Further, leaders can play a great role in shaping followers' self-concepts (Lord, Brown, & Freiberg, 1999), a crucial factor to be considered when examining (vulnerable) narcissism in relation with well-being (e.g., Rose, 2002; Sedikides et al., 2004).

We chose to introduce leaders' *grandiose* narcissism as a moderator for several reasons. First, the relationship between grandiose narcissism and leadership emergence is well established (Grijalva et al., 2015). This entails a practical relevance, as followers are likely to be confronted with leaders possessing grandiose narcissistic traits. It may further be speculated whether vulnerable narcissism hinders leadership emergence, even though this assumption can currently not be substantiated because of a lack of empirical evidence. Second, grandiose narcissism has been related to positive as well as negative indicators of leadership and leadership performance in many instances (e.g., Judge et al., 2006), whereas vulnerable narcissism has not (e.g., Watts et al., 2013). We are therefore able to build on past research, while the examination of leaders' vulnerable narcissism would be merely exploratory. Finally, the relationship between grandiose narcissistic leaders and their followers has been described as parental (Blair, Hoffman, & Helland, 2008;

Conger & Kanungo, 1998), which is an interesting angle, considering that vulnerable narcissists may seek approval and validation from their superiors (in a childlike manner). We believe the combination of leader grandiosity and follower vulnerability to be particularly harmful to followers' work-related well-being.

It has been shown that a positive relationship between leaders and followers is positively related to followers' well-being (Bono & Yoon, 2012). However, the interpersonal implications of narcissism make a positive relationship between two narcissistic individuals, i.e., leader and follower, unlikely. Empirical findings (Miller et al., 2011) associate attachment styles with the facets of narcissism. Adult attachment styles describe the ability to build interpersonal relationships. Depending on individuals' self- and other-concept as, respectively, positive or negative, attachment is described in four categories: secure, dismissing, preoccupied, or fearful (Bartholomew & Horowitz, 1991). While grandiose narcissism (i.e., positive self-concept) is more strongly related to secure or dismissive attachment, vulnerable narcissism (i.e., negative self-concept) is related more strongly to fearful attachment (Miller et al., 2011).

Transferring this to the leader-follower relationship, this would mean that vulnerable narcissistic followers constantly fear rejection or betrayal from their leaders, who (if grandiose narcissists) confirm this fear insofar as they behave in an antagonistic, aggressive, and exploitative manner (Miller et al., 2011; Wink, 1991). Moreover, grandiose narcissists use social interactions as a means to self-enhance at the cost of others, e.g., by devaluing their interaction partners, particularly when threatened (Morf & Rhodewalt, 1993; Sporer, 2002). Thus, if grandiose and vulnerable narcissism *clash* in a particular leader-follower combination, the grandiose leader realizes the vulnerable followers' worst nightmare. Rather than satisfying the followers' need (and claim) for recognition and praise, the leader feels entitled to (ab-) use the follower to self-enhance. The vulnerable narcissistic follower, whose self-worth is inherently threatened, is particularly susceptible to any form of implicit or explicit aggression by the leader. Further, as vulnerable narcissism has been

associated with reduced forgiveness (Sandage et al., 2016), the leader-follower relationship will likely decline inexorably.

Positive leader-follower relationships are important for followers' work-related well-being (Bono & Yoon, 2012), while negative exchanges between leaders and followers can impair followers' health (Schyns & Schilling, 2013; Tepper & Almeda, 2012). We thus expect that leaders' grandiose narcissism will amplify the detrimental relationships between followers' vulnerable narcissism and their emotional exhaustion (H1a), as well as their work engagement (H1b). In reference to job demands-resources theory (Bakker & Demerouti, 2014) we further argue that leaders' personality (i.e., grandiose narcissism) can constitute a work demand for followers, suppressing the motivational and enhancing the health-impairment process. This leads us to the following hypotheses:

Hypothesis 2a (H2a): The positive relationship between followers' vulnerable narcissism and their emotional exhaustion is stronger (becomes more positive) when leaders score high on grandiose narcissism.

Hypothesis 2b (H2b): The negative relationship between followers' vulnerable narcissism and their work engagement is stronger (becomes more negative) when leaders score high on grandiose narcissism.

2.1.3 Method

We tested our hypotheses in leader-follower teams in different organizations. Our selection criterion was direct, regular interaction between leaders and followers. Therefore, only teams that reported directly to their leader were included in our study. Data were collected from both leaders and team members via online and paper-pencil questionnaires. All participants received an individualized code, which enabled us to match leaders' data with those of their teams.

We approached participants in professional networks online (e.g., LinkedIn) and in person (e.g., local business associations). Further, we contacted human resources and organizational health management depart-

ments to find an appropriate sample. As an incentive for participation, we provided a research report and an optional on-site results presentation. The reports contained only mean values to protect participants' personal information. We informed participants of the confidential and anonymous treatment of their data.

2.1.3.1 Sample

Our sample contains data from German organizations in different industries (24% aerospace, 9% consulting services, 9% IT and telecommunications, 10% automobile, 8% steel and metal, 40% others[1]). In total, we collected data from 121 leaders and 429 team members. Matching leader with follower data further reduced the sample size to 71 leaders and 235 team members, as in some cases only leaders or only followers had responded.

The average number of members per team in the final sample was 3.31. Genders were more equally distributed among team members (46.8% female) than leaders (16.9% female). Team members were on average 37.36 years (*SD* = 13.05) and leaders 44.56 years (*SD* = 10.40) old. Team members indicated that they personally interacted with their supervisor three to five times a week on average. The hierarchical position of leaders was evenly distributed with 33.8% of supervisors occupying lower, 43.7% occupying middle, and 21.1% occupying higher managerial positions. The majority of team members did not have leadership responsibilities (82.6%). Team members had spent an average of 3.12 years working under their current supervisor (*SD* = 4.04) and 4.37 years working in the same team (*SD* = 6.69).

1 The category "others" includes building, mining and raw materials, education, biotechnology, chemistry and pharmaceuticals, electrical engineering, energy, finance and insurance, research and development, real estate, rubber, agriculture and forestry, plant and mechanical engineering, paper and printing, and transport. Each of those sectors was represented by 6% or less in our sample. and pharmaceuticals, electrical engineering, energy, finance and insurance, research and development, real estate, rubber, agriculture and forestry, plant and mechanical engineering, paper and printing, and transport. Each of those sectors was represented by 6% or less in our sample.

2.1.3.2 Measures

Vulnerable narcissism

Levels of leaders' and followers' vulnerable narcissism were measured with the ten-item Hypersensitive Narcissism Scale (HSNS, Hendin & Cheek, 1997). Participants indicated their responses on a scale from 1 (disagree strongly) to 7 (agree strongly). A sample item is "My feelings are easily hurt by ridicule or by the slighting remarks of others". Reliabilities were sufficient for followers (Cronbach's alpha = .70) and leaders (Cronbach's alpha = .68).

Grandiose narcissism

Leaders' and followers' levels of grandiose narcissism were assessed with the 16-item short form of the Narcissistic Personality Inventory (Ames et al., 2006). This scale contains 16 forced-choice items with a narcissistic and a non-narcissistic response each (e.g., "I really like to be the center of attention" vs. "It makes me uncomfortable to be the center of attention"). The scale had acceptable reliability for leaders (Cronbach's alpha = .64) and followers (Cronbach's alpha = .69).

Work engagement

The three dimensions of work engagement, vigor, dedication, and absorption, were measured with the Utrecht Work Engagement Scale (UWES, Schaufeli & Bakker, 2003). Responses for the nine items (e.g., "At my work, I feel bursting with energy") could be indicated on a scale from 1 (*never*) to 6 (*always, every day*). The scale had sufficient reliability for leaders (Cronbach's alpha = .91) and followers (Cronbach's alpha = .93).

Emotional exhaustion

The three highest-loading items (e.g., "I feel emotionally drained from my work") of the Maslach Burnout Inventory (Maslach, Jackson, & Leiter, 1996) were applied to assess emotional exhaustion. The response format was identical with that of the work engagement format. Reliabilities were

sufficient for leaders (Cronbach's alpha = .90) and followers (Cronbach's alpha = .84).

2.1.3.3 Controls

Age, gender, and tenure

To rule out the possibility that differences in emotional exhaustion and work engagement were caused by demographic factors, we decided to control for age (e.g., Antoniou, Polychroni, & Vlachakis, 2006; Kanfer & Ackerman, 2004) and gender (e.g., Banihani, Lewis, & Syed, 2013; Posig & Kickul, 2004). Further, as the time leaders and followers spent together likely has an impact on the outcomes, e.g., the longer their interaction, the stronger the effect, we controlled for followers' tenure with their leader. All control variables were assessed using single items. Respondents chose their year of birth from a dropdown menu to indicate their age. The same format was used to assess the time participants had been working under their current supervisor. Further, respondents were asked to state their gender.

Neuroticism

The positive correlation between vulnerable narcissism and neuroticism (Miller et al., 2011), as well as associations between neuroticism and our outcome variables (e.g., Langelaan, Bakker, van Doornen, & Schaufeli, 2006), led us to include this Big Five trait as control measure. Neuroticism was measured with three items from the BFI-S (John, Donahue, & Kentle, 1991). The items, e.g., "I see myself as someone who worries a lot", were rated on a scale from 1 (disagree strongly) to 5 (agree strongly) and had acceptable reliability (Cronbach's alpha = .60).

2.1.3.4 Analysis

We applied multilevel modeling in Mplus (Version 7.3) (Muthén & Muthén, 2012) to account for the nested data structure. All level-1 variables were group-mean centered (except for gender as a dichotomous variable), and the level-2 moderator was grand-mean centered (cf. Hofmann & Gavin, 1998). All analyses were performed separately for the two outcome mea-

sures, emotional exhaustion and work engagement. To specify the ICC values of our outcome variables, we first calculated the null model. In the second step, all control and predictor variables were entered. Our focal predictor variable, vulnerable narcissism on level 1, was modeled with a random slope; all other effects were estimated as fixed effects. In the third step, we included the cross-level interaction of leaders' grandiose narcissism with the slope of followers' vulnerable narcissism.

2.1.4 Results

2.1.4.1 Descriptive statistics

Inter-correlations, means, and standard deviations for the individual-level study variables can be found in Table 1. Followers' vulnerable narcissism was significantly related to their work engagement (r (235) = -.24, p = .001) and emotional exhaustion (r (235) = .23, p < .001), providing initial support for H1a and H1b. Further, work engagement was negatively (r (235) = -.21, p < .001) related to emotional exhaustion. The unconditional null models showed no significant between-group variance (τ¬00 = 0.11, p = .079, one-sided), significant within-group variance (σ2 = 1.32, p < .001, one-sided) for emotional exhaustion, and significant between-group (τ¬00 = 0.21, p = .001, one-sided) and within-group variance (σ2 = 0.77, p < .001, one-sided) for work engagement. Accordingly, ICC values indicated that differences between teams accounted for a larger variation in work engagement (ICC = .22) than in emotional exhaustion (ICC = .08). Despite the low variation between teams for emotional exhaustion (we will return to this in the discussion), we deemed the application of multilevel analysis appropriate (Kahn, 2011).

Table 1. Summary of Intercorrelations, Means, and Standard Deviations of Individual-Level Study Variables

Measures		1	2	3	4	5	6	7	8	*M*	*SD*
1	Tenure with Leader									3.12	4.04
2	Age	.07								37.36	13.05
3	Gender[1]	.10	-.03							0.53	0.50
4	Neuroticism	-.11	-.10	-.11	(.60)					3.96	1.13
5	Grandiose Narcissism	-.01	-.16*	.08	-.09	(.69)				4.54	2.93
6	Vulnerable Narcissism	-.13*	-.21**	.09	.33**	.09	(.70)			2.90	0.79
7	Work Engagement	.27**	.09	.14*	-.18**	-.04	-.24**	(.93)		4.44	1.00
8	Emotional Exhaustion	.04	.03	.06	.34**	.02	.23**	-.21**	(.84)	2.95	1.21

*Note. 0 = female, 1 = male; N = 235. *p < .05. **p < .01. Two-sided. Cronbach's Alpha in parentheses on the diagonal.*

2.1.4.2. Intra-individual main effects

The results of multilevel analyses are presented in Table 2. Hypotheses 1a suggested a positive relationship of vulnerable narcissism with emotional exhaustion, and Hypothesis 1b suggested a negative relationship of vulnerable narcissism with work engagement.

Followers' vulnerable narcissism was positively related to their emotional exhaustion (b = .23, p = .021) and negatively related to work engagement (b = -.27, p = .017), lending support to Hypotheses 1a and 1b. Except for neuroticism, which was positively related to followers' emotional exhaustion (b = .34, p < .001), none of the other control variables reached significance.

Table 2. Results of Multilevel Modeling Analysis Predicting Followers' Emotional Exhaustion

Level and Variable	Null Models		Main Effect Models		Cross-Level Interaction	
	EE	WE	EE (H1a)	WE (H1b)	EE (H2a)	WE (H2b)
Level 1 (Follower)						
Intercept	2.83 (.08)***	4.52 (.07)***	2.89 (.13)***	4.35 (.11)***	2.88 (.13)***	4.37 (.11)***
Tenure with Leader			.02 (.02)	-.00 (.01)	.02 (.02)	-.00 (.01)
Age			.01 (.01)	.01 (.01)	.01 (.01)	.01 (.01)
Gender[1]			.12 (.16)	.17 (.13)	.13 (.16)	.12 (.13)
Neuroticism			.34 (.09)***	-.08 (.07)	.34 (.08)***	-.09 (.07)
Grandiose Narcissism (F)			.03 (.03)	.02 (.02)	.03 (.03)	.01 (.02)
Vulnerable Narcissism (F)			.23 (.10)*	-.27 (.11)*	.19 (.13)	-.28 (.10)**
Level 2 (Leader)						
Grandiose Narcissism (L)			.02 (.03)	-.02 (.03)	.02 (.03)	-.02 (.03)
Cross-Level Interaction						
Vulnerable N. (F) x Grandiose N. (L)					-.03 (.04)	-.06 (.03)*
Variance Components						
Level-1 Error Variance	1.32	0.77	1.15	0.68	1.08	0.68
Level-2 Error Variance	0.11	0.21	0.14	0.21	0.19	0.21
Additional Information						
ICC	.08	.22				
-2 Log Likelihood	1020	883	724	629	719	623
Number of Estimated Parameters	3	3	11	11	13	13

*Note. [1]0 = female, 1 = male; EE=Emotional Exhaustion, WE=Work Engagement; F = Follower; L = Leader. L1 N = 235 and L2 sample size = 71. Unstandardized estimates; values in parentheses are standard errors; *p < .05; ** p < .01; ***p*

2.1.4.3 Cross-level interaction effects

Hypotheses 2a and 2b suggested that leaders' grandiose narcissism would moderate the main effects of followers' vulnerable narcissism on emotional exhaustion (H2a) and work engagement (H2b). The moderation of the positive relationship between followers' vulnerable narcissism and their emotional exhaustion by leaders' grandiose narcissism was not significant (b = -.03, p = .534), leading us to reject Hypothesis 2a. The negative relationship between followers' vulnerable narcissism and their work engagement was moderated by leaders' grandiose narcissism (b = -.06, p = .031). In Figure 1, we plotted the simple slopes for +/- 1SD of the moderator.

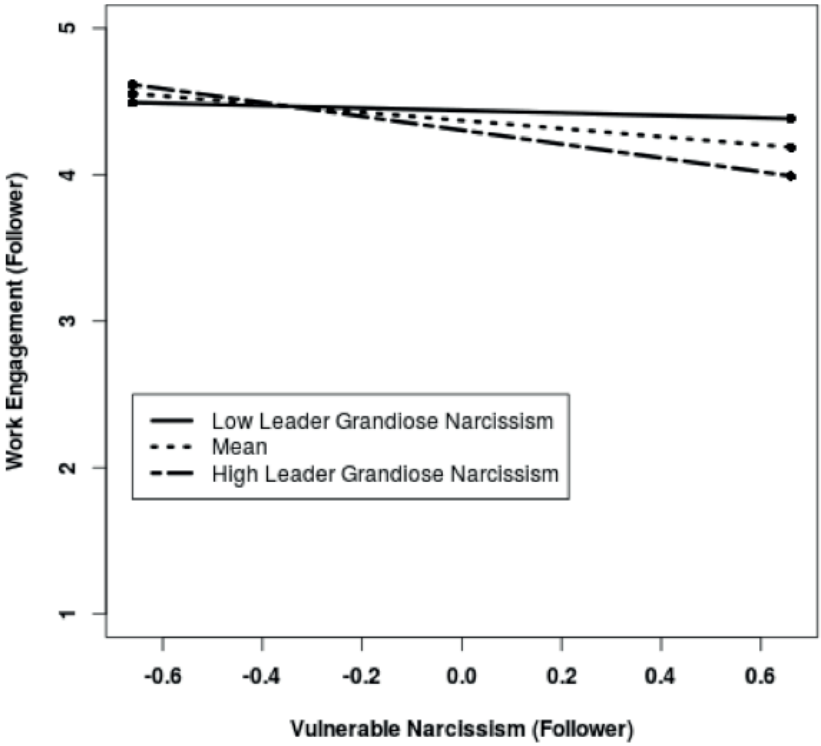

Figure 1. Cross-level interaction of leaders' grandiose narcissism and followers' vulnerable narcissism on followers' work engagement.

For the plot and the computation of simple slopes, we made use of the online tools developed by Preacher, Curran, and Bauer (2006). Simple slope analyses showed that the relationship between followers' vulnerable narcissism and their work engagement was not significant (b = -.08, p = .535) when leaders reported a low value in grandiose narcissism, whereas it was significant for mean values of the moderator within the sample (b = -.28, p = .004), as well as for high values (b = -.47, p < .001) of the moderator. Hypothesis 2b was thus supported.

2.1.4.4. Additional analyses

To emphasize the interactive nature of leadership and calls in the literature demanding the examination of leaders' health (Barling & Cloutier, 2017), we ran some additional analyses to test whether the proposed main and interaction effects would also affect leaders' psychological well-being. Considering the small sample size, particularly on Level 2, and the associated power restrictions, we did not include any control variables in our analysis.

Using the *Complex* option in Mplus, we accounted for the nested data structure and ran two regression analyses, one for work engagement and the other for emotional exhaustion of the leaders as dependent variables. As predictors, we included vulnerable and grandiose narcissism of the leader, grandiose narcissism of followers, and the interaction of leaders' vulnerable narcissism with followers' grandiose narcissism. All variables were grand-mean-centred. Leaders' emotional exhaustion was positively related to their own vulnerable narcissism (b = .53, p = .019) and negatively to their own grandiose narcissism (b = -.14, p = .011); furthermore, followers' grandiose narcissism showed a significant positive relationship with emotional exhaustion of leaders (b = .05, p = .042). The interaction term was not significant. For work engagement of leaders as a dependent variable, neither the main effects nor the interaction term reached significance.

It is also interesting to note that leaders scored significantly higher on grandiose narcissism (M = 6.30, SD = 2.90) compared to followers (M = 4.54, SD = 2.93, t = -4.43, p < .001), whereas followers scored significantly higher

on vulnerable narcissism (M = 2.90, SD = 0.79) compared to leaders (M = 2.46, SD = 0.74, t = 4.17, p < .001).

2.1.5 Discussion

The main purpose of this article was to examine implications of vulnerable narcissism in an organizational context, specifically with regard to work-related well-being and leader-follower interactions. By confirming the expected positive relationship between followers' vulnerable narcissism and their levels of emotional exhaustion, we transfer existing findings relating narcissistic vulnerability to adverse health outcomes (e.g., Sandage et al., 2016; Tritt et al., 2010) to the organizational context. Further, we extend those findings by demonstrating that vulnerable narcissism not only has health-impairing effects but is a negative predictor of employees' work engagement.

In addition to looking at intra-individual effects of vulnerable narcissism, our study offers a significant contribution by integrating leaders' grandiose narcissism as a contextual moderator. Our findings confirmed that leaders' grandiose narcissism enhanced the negative relationship between followers' vulnerable narcissism and their work engagement, thus suppressing the motivational process.

Contrary to our expectations, leaders' grandiose narcissism did not moderate the relationship between followers' vulnerable narcissism and their emotional exhaustion. According to job demands-resources theory (Bakker & Demerouti, 2014), job demands are more strongly associated with emotional exhaustion and job resources with work engagement. It could therefore be that leaders' grandiose narcissism has differential effects on the health-impairment versus the motivational process. From a methodological perspective, small differences in levels of emotional exhaustion between teams left little room for a level-2 variable, i.e., leaders' grandiose narcissism, to explain variation in the outcome, which needs to be considered when interpreting the results of this study. Further, the sample size and associated

power restrictions could be the reason that the effect did not reach significance.

In summary, we demonstrate the negative intrapersonal implications of vulnerable narcissism for followers' work-related well-being. Further, we show that, in the case of work engagement, this effect can be enhanced when followers are confronted with a leader who possesses grandiose narcissistic traits. The moderating role of leaders' personality could not be confirmed in the case of emotional exhaustion. By demonstrating important individual and interpersonal implications of narcissistic vulnerability at work, we confirm calls in the literature demanding the consideration of vulnerable, in addition to grandiose narcissism in the organizational context (e.g., Campbell et al., 2011; Grijalva & Newman, 2015). Our study uncovers several directions for future research concerning the multifaceted nature of narcissism and differential effects on work-related well-being, interpersonal interactions, and leader- and followership.

2.1.5.1 Limitations and directions for future research

The main methodological strength of the current study lies in the multilevel design and the combination of leader and follower data. However, limitations must clearly be noted. First, the sample size, particularly on level 2, is not extraordinarily large. This is owed to the challenge of recruiting leaders and followers in teams.

Another limitation of our study that needs to be considered is the selection of measurement scales for the outcome variable emotional exhaustion, as well as the facet of grandiose narcissism. To minimize participants' effort, we assessed both constructs with a short scale format, which might attenuate the measures' validity (Miller et al., 2014). This concern is somewhat mitigated by the fact both scales have been validated and applied in previous research (Grijalva & Newman, 2015; Kinnunen, Mäkikangas, Mauno, De Cuyper, & De Witte, 2014). The use of the NPI 16 did not allow us to examine differential effects of more subtle dimensions of grandiose narcissism such as authority, exhibitionism, superiority, vanity, exploitativeness, entitlement, and self-sufficiency (Raskin & Terry, 1988).

Further, while we did include neuroticism as a control measure, the inclusion of other personality traits, particularly agreeableness or extraversion (Miller et al., 2011), could have been useful. Out of the Big Five traits, we chose neuroticism, as we expected the strongest relations to negative psychological well-being, as well as the greatest overlap with narcissistic vulnerability (Miller et al., 2011).

We entered employees' grandiose narcissism in our analyses to account for the multifaceted nature of narcissism and to examine potential differential effects. Past research has established relations between grandiose narcissism and well-being (e.g., Sedikides et al., 2004). While we found similar effects, i.e. a negative relationship between grandiose narcissism and emotional exhaustion, in our leader sample, we could not confirm these results for our subsample of followers. This could in part be attributed to the choice of measurement scale, as discussed above.

Regarding the study design, one could criticize the cross-sectional nature of the data. While a cross-lagged panel design with separate measurements of predictors and outcomes might have reduced sampling and measurement biases (Selig & Little, 2012), we estimated the additional cost to be disproportionate to the benefits in the light of our research question. As we examined narcissism as a stable personality trait (del Rosario & White, 2005), we deemed reversed causality, e.g., work engagement causing lower levels of narcissism, unlikely. Our primary interest was the investigation of, theoretically, time-invariant effects. However, considering that leader and follower narcissism did interact in our study, it would be interesting to examine dynamic trajectories (Collins, 2006) as well. For example, using an ambulatory, event-based sampling approach, future research could look at day-to-day interactions of leader-follower dyads with narcissistic characteristics to see how these exchanges differ from dyads without narcissistic traits and how they affect leaders' and followers' work-related well-being.

Further, the underlying mechanisms explaining the relationship between vulnerable narcissism and work-related well-being could be investigated more thoroughly. It is likely that constructs related to employees'

self-concept and particularly their self-esteem (e.g., Rose, 2002) play a crucial role here. If such underlying mechanisms could be uncovered, this would have great practical implications, as they would provide levers for organizational health management and personnel development measures.

Next to the examination of well-being outcomes, an interesting avenue for future research could be to further explore the implications of vulnerable narcissism in the leadership process. First, in our follower sample, vulnerable narcissism was more prevalent, whereas the leader sample reported higher levels of grandiose narcissism. This is in line with previous research linking grandiose narcissism to leadership emergence. Little is known about the implications, if any (Watts et al., 2013), of vulnerable narcissism on leadership (emergence). It may be speculated whether the maladaptive aspects of vulnerable narcissism, particularly the fragile self-concept, hinder leadership emergence. Moreover, vulnerable narcissism may be particularly relevant in the context of followership (Uhl-Bien, Riggio, Lowe, & Carsten, 2014). It could be fruitful to examine implications of vulnerable narcissism on followers' perceptions of leadership and leader behavior, which, in turn, affects the quality of leader-follower exchanges (van Gils, van Quaquebeke, & van Knippenberg, 2010).

Even though the study was based on exploratory analyses with a relatively small sample size, we found that the negative intrapersonal implications of vulnerable narcissism affect *leaders'* emotional exhaustion as well. These analyses indicated further that followers' levels of grandiose narcissism directly affect leaders' emotional exhaustion. While these preliminary findings need to be replicated in a bigger sample, they offer an interesting avenue for future research, particularly considering calls in the literature to pay more attention to leaders' well-being (Barling & Cloutier, 2017). Analogous to findings indicating that followers' well-being affect the well-being of their leaders (Wirtz, Rigotti, Otto, & Loeb, 2017), future research should take a closer look at the effects of followers' characteristics on their leaders' health. Given that today's work environment is characterized by social interactions in many instances, the idea that others (e.g., leaders, followers, peers) can constitute a work demand or resource through their individual characteristics

is promising. In addition to traits related to interpersonal difficulties, i.e., narcissism, future research could look at more positive aspects such as agreeableness or emotional intelligence.

2.1.5.2 Implications for theory and practice

Our study offers several theoretical contributions. First, we show that the calls to integrate vulnerable narcissism into organizational research (e.g., Campbell et al., 2011; Grijalva & Newman, 2015) are justified. While vulnerable narcissism may be less relevant for outcomes such as leadership emergence, which have been a primary focus in past research on narcissism in organizations, we show its relation to work-related well-being and leader-follower interactions. The multidimensional nature of narcissism should thus be considered in future organizational research.

Second, our study adds to the understanding of certain demands and resources postulated in job demands-resources theory (Bakker & Demerouti, 2014). Looking at the interpersonal effects of narcissism, we demonstrate that leaders with high levels of grandiose narcissism can pose a job demand, especially for followers with high values in vulnerable narcissism. Further, preliminary analyses suggest that followers' grandiose narcissism can be a threat for leaders, as it showed to be positively related to leaders' emotional exhaustion.

Finally, in underlining the interpersonal dynamic of narcissism in the leader-follower relationship, our study adds to the leadership literature. In particular, we contribute to leadership approaches that consider the outcomes of leadership to be a result of mutual contributions from both leaders and followers (Graen & Uhl-Bien, 1995; Uhl-Bien et al., 2014; van Gils et al., 2010). While traditional approaches have examined leadership effectiveness as a function of leaders' personality traits (Grijalva et al., 2015; Judge, Bono, Ilies, & Gerhardt, 2002), we show that both leaders' and followers' characteristics need to be studied to determine individual-level outcomes.

Further, practical implications can be derived from our findings. The relationship of employees' vulnerable narcissism to reduced work engagement

and enhanced emotional exhaustion sheds light on individual risk factors for mental health. Looking at the nature of vulnerable narcissism and particularly the core characteristic, a fragile self-concept that is easily threatened by external events, personnel development measures could aim at stabilizing the self-image of these individuals. More importantly, individuals and organizations would benefit from trainings that generate awareness of different perception and attribution styles, thus creating more room for mutual understanding and better conflict management.

An additional implication lies in the finding that the negative relations between followers' personality and their well-being can be reinforced as a function of leaders' grandiose narcissism. Particularly as adaptive aspects of grandiose narcissism enhance leadership emergence (Grijalva et al., 2015) and followers might thus frequently be confronted with (grandiose) narcissistic leaders, organizations need to find a way to diminish negative effects of narcissistic leadership. Potential levers in this regard could be leadership coaching, mediation, or employee assistance programs with psychologically trained personnel.

2.1.5.3 Conclusion

Our article successfully transfers clinical research on narcissistic vulnerability to the organizational context. We demonstrate that vulnerable narcissism can have an adverse impact on employees' psychological health and further suppress the motivational process. On an interpersonal level, these negative relations are exacerbated by leaders' grandiose narcissism. Our study emphasizes the relevance of vulnerable narcissism in organizational research and the need to take a differentiated look at the multiple facets of narcissism. While grandiose narcissism appears particularly relevant with regard to leadership (emergence), vulnerable narcissism is a promising predictor for individual health outcomes. Vulnerable narcissism can play a central role in leader-follower interactions, particularly regarding followers' perceptions of leadership.

2.2 What About the Leader? Crossover of Emotional Exhaustion and Work Engagement from Followers to Leaders

2.2.1 Abstract

Although a growing body of research links leadership behavior to follower health, comparatively little is known about the health effects of being in the lead. This longitudinal study of 315 team members and 67 leaders examined the crossover of emotional exhaustion and work engagement from followers to leaders. Leader emotional self-efficacy was tested as a moderator in the crossover process. Multiple regression analyses revealed that followers' work engagement was positively related to leaders' work engagement eight months later, controlling for followers' tenure with the leader, leader gender, autonomy, workload, and work engagement at time one. Leaders' emotional self-efficacy did not moderate the crossover of work engagement. Followers' emotional exhaustion was not directly related to leaders' emotional exhaustion over time. We did find a significant interaction effect for follower emotional exhaustion and leader emotional self-efficacy. This paper is the first to show that crossover of emotional exhaustion and work engagement can unfold over time from team members to leaders. Main theoretical implications lie in the finding that—in line with job demands–resources theory—followers' psychological states can pose a demand or resource for leaders, and influence their well-being. For practitioners, our results offer valuable insights regarding the design of organizational health interventions as well as leadership development measures.

2.2.2 Introduction: What about the leader? Crossover of Emotional Exhaustion and Work Engagement from Followers to Leaders

Traditionally, leadership research has focused on leader traits and behaviors, and follower outcomes (e.g., Derue, Nahrgang, Wellman, & Humphrey, 2011; Judge, Bono, Ilies, & Gerhardt, 2002). Recently, however, researchers have called for a more integrated perspective on leadership, and

suggested to examine the role of followership and mutual influence processes between leaders and followers (e.g., Bono & Yoon, 2012; Uhl-Bien, Riggio, Lowe, & Carsten, 2014). A more interactional perspective on leadership can deepen our understanding of the leadership process (Markham, Yammarino, Murry, & Palanski, 2010).

Past research on leadership and health has treated leaders as promoters of organizational and individual health and safety, examining which resources leaders should provide to enhance followers' well-being (Halbesleben et al., 2013; Kelloway & Barling, 2010). Comparatively little is known about the (health) effects of being in the lead. By solely regarding leaders as providers of a healthy work environment, the complexity and demands of the leadership role are neglected. Therefore, in this paper, we pose the question "What about the leader?" and analyze the psychological health outcomes on the leader level.

We address this issue by examining whether followers' psychological well-being in terms of emotional exhaustion and work engagement affects the well-being of their leaders. Further, we probe whether individual differences in leaders' emotional self-efficacy act as a moderator for the proposed crossover effects from followers to leaders. In order to develop our hypotheses, we draw on the literature of crossover—the experience of psychological states in one person affecting the experience of congruent states in another individual (e. g. Bakker, Westman, & van Emmerik, 2009; Westman & Bakker, 2008).

There are several empirical as well as theoretical contributions of this study: First, by looking at leader outcomes, we add a new perspective to the leadership and health literature, which has thus far mainly focused on outcomes on the follower level (Skakon et al., 2010). Second, we contribute to the literature on crossover in numerous ways. We integrate crossover research in the framework of job demands-resources theory (Bakker & Demerouti, 2014), and broaden this framework by demonstrating that follower attributes can constitute a resource or demand for leaders. Further, our study is the first longitudinal examination of crossover in the workplace, shedding

light on lagged crossover effects in this particular setting. Whereas early studies in this line of research relied on single-source reports (e.g. Bakker & Schaufeli, 2000), we obtained data from multiple sources. Additionally, by examining crossover from followers to leaders, we explore a direction of crossover that has thus far received little attention. Finally, by testing emotional self-efficacy as a moderator, we aim to gain insights on whether crossover is more likely based on an empathic process or unconscious contagion (Hatfield, Cacioppo, & Rapson, 1994; McIntosh, Druckman, & Zajonc, 1994).

2.2.2.1 Follower attributes as job demands or resources for leaders

A central characteristic of the leadership role is the frequent interaction and exchange with followers, as posited in leader–member exchange theory (Graen & Uhl-Bien, 1995). Positive relationships between leaders and followers have been found to promote positive follower outcomes, such as reduced emotional exhaustion and enhanced resources (e.g., Bono & Yoon, 2012), whereas outcomes on the leader level have received scant research attention. In line with job demands–resources theory (Bakker & Demerouti, 2007, 2014; Demerouti, Nachreiner, Bakker, & Schaufeli, 2001), leaders are often regarded as a resource for followers, fostering their optimism and work engagement (Tims, Bakker, & Xanthopoulou, 2011), and reducing perceived stress and emotional exhaustion (Thomas & Lankau, 2009). In the current study, we reverse the lens, and examine how followers influence their leaders' psychological well-being.

As leading followers involves managing their emotions (e.g. transform, inspire), we posit that followers' emotions or mental states are an aspect of leaders' jobs, as is described in JD-R theory (Bakker & Demerouti, 2014): "Examples are [...] emotionally demanding interactions with clients or customers." (p. 9). In the case of leaders, one could add *followers*, as the interaction with them is a central part of leaders' jobs, which can at times be demanding. For example, one can imagine that leaders with a team of exhausted followers are depleted of resources, possibly invest energy in lifting followers' spirits without success, and, in turn, may experience emotional exhaustion themselves. On the contrary, leaders with a team of engaged and commit-

ted followers have more (psychological and other) resources at their disposal, and thus experience more work engagement themselves. In the following paragraph, we develop our hypotheses regarding followers' influence on their leaders via social interaction and crossover processes.

2.2.2.2 Crossover of mental states

The concept of crossover describes the experience of psychological states in one person affecting the experience of congruent states in another individual within the same social system (Bakker, van Emmerik, & Euwema, 2006; Bolger, DeLongis, Kessler, & Schilling, 1989; Westman & Etzion, 1995). Here, people make a proactive, cognitive effort to understand others' emotions and, in an empathic reaction, experience concordant feelings of joy or sadness as a result (Hsee, Hatfield, Carlson, & Chemtob, 1990). This process is based on a social learning perspective (Bandura, 1997), where social information is processed and used as a behavioral cue.

Next to empathic crossover, two other routes to the transfer of emotions have been suggested. First, the relationship between mental states of different individuals could be spurious (Westman, 2001), particularly in an organizational setting, where all parties are subjected to similar work demands. Second, emotional contagion (Hatfield et al., 1994) could play a role. Emotional contagion describes a process of emotional transfer from one person to another that occurs automatically, unintentionally, and is beyond the conscious awareness of the individuals involved. The transfer is expected to take place via synchronization of facial expressions, movements, postures or vocalizations between *sender* and *receiver*, resulting in a concordant emotional experience in the *receiver* (Hatfield et al., 1994; Kleinke, Peterson, & Rutledge, 1998).

Evidence suggests that psychological strain such as burnout or depression can cross over in different contexts, for example among couples (Demerouti, Bakker, & Schaufeli, 2005), friends (Prinstein, 2007), and colleagues (Bakker et al., 2006). Hereafter we argue that crossover occurs also in a leadership context, and is likely based on empathic crossover rather than emotional contagion.

Crossover of emotional exhaustion from followers to leaders

Originally, crossover has been examined as a dyadic process between spouses (e.g. Demerouti et al., 2005). Evidence from an organizational context shows that mental states do not only transfer between individuals but also from team to individual levels. Across several samples—particularly in health care and service professions—it has been demonstrated that team levels of burnout can cross over and affect the experience of burnout in individual team members (for an overview see Bakker et al., 2009; Westman & Bakker, 2008). Underlying these results are system theories, which conceptualize individuals as part of a (social) system (e.g. Bronfenbrenner, 1977; Moos, 1984), indicating interrelations among all components which should not be examined in isolation. Furthermore, research has shown that team level predictors are more accurate than individual level measures if one examines team experiences (Gully, Incalcaterra, Joshi, & Beaubien, 2002). In the case of crossover, it has been argued that people work interdependently, and are therefore individually influenced by characteristics of their work groups (Bakker et al., 2006). We posit that the same applies to leaders and their team.

The nature of the leadership role, which is marked by social interaction with followers (Graen & Uhl-Bien, 1995) and thus the need to regulate emotion (Humphrey, Pollack, & Hawver, 2008), suggests, that strain could transfer between followers and leaders through social exchange (Bakker & Schaufeli, 2000), specifically when leaders and followers work closely together. This assumption has thus far only been tested in two studies (Bakker, Westman, & Schaufeli, 2007; Westman & Etzion, 1999); just one of them examining the path from followers to leaders. Westman and Etzion (1999) found school principals' strain to cross over to teachers, and vice versa. Given that the social exchange with followers is inherent to the leadership role and could pose a job demand or resource for leaders, we think it is crucial to more thoroughly investigate this direction of crossover, with a particular focus on leader outcomes. Moreover, prior crossover studies have used samples characterized by high emotional labor demands (e.g., nurses, teachers, physicians, law enforcement), which are also part of the leadership role

(Humphrey, Pollack, & Hawver, 2008). We therefore expect similar effects in the leadership context.

A particularly relevant strain in this context is emotional exhaustion (Bakker & Demerouti, 2014). Emotional exhaustion—a state of depletion and fatigue—is considered the core component of job burnout (Schaufeli & Van Dierendonck, 1993) and is positively related to, yet distinct from, depression (Leiter & Durup, 1994). It has been identified as the first symptom to develop in the burnout process (Leiter & Maslach, 1988). Given the relatively short timeframe of our investigation (eight months) compared to longitudinal studies on the development of burnout (e.g., Hakanen, Schaufeli, & Ahola, 2008; Houkes, Janssen, de Jonge, & Bakker, 2003), we expected to be better able to observe changes in emotional exhaustion rather than burnout.

In reference to job demands–resources theory (Bakker & Demerouti, 2014), we expected that followers' levels of emotional exhaustion would pose a job demand or social work stressor for their leaders who, being exposed to this stressor, develop higher levels' of emotional exhaustion over time (Hakanen et al., 2008). We propose:

H1a: There is a positive lagged relationship between followers' and leaders' emotional exhaustion.

Crossover of work engagement from followers to leaders.

Next to the crossover of strain, evidence for the crossover of positive emotions and mental states exists in both experimental (for an overview, see McIntosh et al., 1994) and field studies (Bakker, Demerouti, & Schaufeli, 2005; Bakker et al., 2006). The latter found that work engagement at the team level affects levels of work engagement in individual team members. Work engagement is an indicator of work-related well-being (Rothbard & Shefali, 2012), which is characterized by vigor, dedication, and absorption (Schaufeli, Salanova, Bakker, & Gonzales-Roma, 2002).

Particularly in a leadership context, where leaders' success is inextricably linked with followers' performance and attitude, we expected a crossover

of work engagement from followers to leaders. From a cognitive perspective, we argue that leaders who perceive team members as engaged can rely more on the teams' efforts and performance. Without having to worry about team commitment or performance, leaders can become immersed more in their own tasks, and experience higher work engagement themselves (Schaufeli et al., 2002).

In job demands–resources theory (Bakker & Demerouti, 2014), work engagement constitutes an important indicator of individual well-being next to emotional exhaustion, and was therefore included in the current study. Analogous to H1a, we refer to job demands–resources theory (Bakker & Demerouti, 2014) in explaining crossover effects from followers to leaders. We expected followers' work engagement to act as a social resource for leaders, resulting in higher levels of leader work engagement over time (Hakanen et al., 2008). We propose:

H1b: There is a positive lagged relationship between followers' and leaders' work engagement.

Leaders' emotional self-efficacy as a moderator

By introducing emotional self-efficacy as a potential moderator of the proposed crossover process from followers to leaders, we aim to shed some light on whether these effects take place more automatically (contagion) or reflect a more conscious process (empathic crossover). As opposed to the automatic transfer in emotional contagion, an empathic process of crossover suggests that an individual's predisposition or ability to identify and understand others' emotions might facilitate the transfer of emotions or strain (Hatfield et al., 1994). This has been confirmed to the extent that a *receiver's* susceptibility to others' emotions has been found to moderate crossover of psychological strain in the workplace (Bakker & Schaufeli, 2000).

Emotional self-efficacy is a person's belief in their competence with regard to emotional processes (Kirk, Schutte, & Hine, 2008); specifically, the ability to comprehend, impact, and regulate one's own moods and emotions, as well as those of others (Mayer, Salovey, Caruso, & Sitarenios, 2003; Mayer

& Salovey, 1993). According to Bandura (2006), "the efficacy belief system is not a global trait, but a differentiated set of self-beliefs linked to distinct realms of functioning" (p. 307). As we are looking at crossover processes of mental phenomena (i.e. exhaustion, engagement), we deemed self-beliefs linked to emotional functioning particularly relevant.

We chose emotional self-efficacy rather than a more general measure such as leadership style as a moderator, because in our opinion, it more accurately reflects the process of (empathic) crossover: Leaders high on emotional self-efficacy are likely motivated to pay attention to followers' emotions and psychological wellbeing, therefore detect and identify emotions more easily (Bandura, 1997; Judge & Bono, 2001), and finally are affected by them.

Additionally, Bandura and colleagues (2003) found a relationship between empathic self-efficacy—a construct related to emotional self-efficacy—and increased vulnerability to depression in adolescent females over time. The authors concluded that the effect could be explained through an accumulation of negative emotional experiences for these individuals who personalize the strain of others and therefore develop negative symptoms over time. We hypothesize that emotional self-efficacy plays a similar role in the (empathic) crossover from followers to leaders. Hence, we propose:

H2a: The lagged relationship between followers' and leaders' emotional exhaustion is stronger (more positive) when leaders' emotional self-efficacy is high.

H2b: The lagged relationship between followers' and leaders' work engagement is stronger (more positive) when leaders' emotional self-efficacy is high.

2.2.3 Method

2.2.3.1 Procedure

The current study was part of a larger research project on leadership and health (Rigotti et al., 2014). Information was collected at two points in time

across a period of eight months. This time lag was chosen mainly for practical reasons. Fluctuation in staff, as well as changes in leadership positions, are a common part of today's work environment. To avoid massive data loss due to changes in team composition, we settled for this relatively short time frame. Additionally, longitudinal studies have shown positive lagged relationships between job demands and emotional exhaustion, as well as job resources and work engagement in timeframes from three months up to three years (e.g., Hakanen et al., 2008; Houkes et al., 2003; Idris, Dollard, & Yulita, 2014; Philipp & Schüpbach, 2010). We could therefore expect to detect changes in leaders' work engagement and emotional exhaustion in our study.

We approached respondents via the HR department or executive management of their organizations. In all cases, we included employee representatives in the process, and obtained their consent. We collected data via online and paper–pencil questionnaires, and assured respondents of confidential and anonymous treatment of their information. Leaders and their team members received an individualized code which enabled us to match their responses afterwards. One important selection criterion in our sampling strategy was the proximity between leaders and followers, both in terms of location and hierarchy, as we deemed regular social interactions between leaders and followers a necessary prerequisite for crossover processes to occur (Bakker & Schaufeli, 2000). Therefore, the leaders in our sample always directly supervised their teams, and team members did not report (directly) to any other leader.

2.2.3.2 Sample

We obtained data from leaders and team members of different German and Swedish organizations in banking, auditing, social services, education, and facility management. Participants within these industries were selected based on their job descriptions. All jobs were characterized by high service demands, customer orientation, and required regular interaction and exchange among team members (including team leaders). We collected data in Germany and Sweden out of convenience. Both countries have a similar reference frame with regard to working conditions, considering the extent of

globalization and exchange, as well as common regulations both countries are subjected to as members of the European Union.

Our total sample at time one consisted of 164 leaders and 1,661 team members. At T1 we documented response rates of 62% in Germany and 46% in Sweden, which are not uncommon figures for occupational health research. Systematic research even suggests that the impact of response rates on outcomes is negligible (Cull, O'Connor, Sharp, & Tang, 2005; Schalm & Kelloway, 2001). At time two, which was eight months later, 123 leaders and 1,094 team members had provided information. Overall this level of attrition is not uncommon for longitudinal research (cf., Brauchli, Schaufeli, Jenny, Füllemann, & Bauer, 2013).

After matching participants across teams and time points, and excluding those who changed teams or roles (i.e. team-members who became leaders) during data collection, we were left with a total sample of 75 leaders and 342 team members. In total, 41 leaders and 567 team members did not respond at time two, 34 leaders and 593 team members were excluded because they could not be matched (i.e. data from either the leader or the team members was missing), 14 leaders and 158 team members were excluded because they changed their team during the study or left the organization and, finally, one team member was excluded because of a role change (promotion from follower to leader). Missing data further reduced the sample used for analysis to 67 leaders and 315 team members.

A team consisted of an average of 4.6 (SD = 3.1) members. On average, they had been working with their current supervisor for 4.7 (SD = 2.4) years. More women (followers: 82%; leaders: 64%) than man participated in the study. Team members' age was on average 43 (SD = 10.0) years, and leaders' was 47 (SD = 8.5) years. We had more German (followers: 69%; leaders: 77%) than Swedish (followers: 31%; leaders: 23%) participants in the sample. Swedish participants reported more work engagement than German participants (followers: T1: $t(250) = 11.00$, $p < .001$; T2: $t(240) = 10.02$, $p < .001$; leaders: T2: $t(65) = 2.32$, $p = .024$). Levels of emotional exhaustion did not differ significantly between countries.

Drop-out analysis revealed no significant differences in age, gender, or any of the study variables in the final leader sample. Compared to the initial sample, in the retained follower sample, participants reported more emotional exhaustion ($t(299) = -2.68$, $p = .008$), work engagement ($t(305) = -3.47$, $p = .001$), and a shorter tenure with their leader ($t(291) = -2.65$, $p = .009$). Further, this sample contained more women than men ($X^2(1) = 6.17$, $p = .007$). Although these differences might be problematic in terms of response bias, the small mean differences (.33 for work engagement, .29 for emotional exhaustion, and .99 for tenure) in relation to the standard deviations for the scales (1.11 for work engagement, .91 for emotional exhaustion, and 2.37 for tenure) somewhat reduce this concern.

2.2.3.3 Measures

For our analysis, we used followers' self-reports on emotional exhaustion, work engagement, and tenure with the leader at time one. We used leaders' self-reports on emotional exhaustion, work engagement (T1 and T2), emotional self-efficacy, autonomy, and workload (T1).

Emotional exhaustion

Leader and follower emotional exhaustion was measured using the three highest-loading items of the Maslach Burnout inventory (cf. Kinnunen, Mäkikangas, Mauno, De Cuyper, & De Witte, 2014); for example, "I feel emotionally drained from my work" (Maslach, Jackson, & Leiter, 1996). Participants were asked to indicate their responses on a 7-point Likert-type scale ranging from 0 (*never*) to 6 (*always - every day*). The scale had sufficient reliability for both leaders (T1: Cronbach's α = .79, T2: Cronbach's α = .85) and followers (Cronbach's α = .81).

Work engagement

Leader and follower work engagement was assessed using six items measuring the core dimensions vigor and dedication from the Utrecht Work Engagement Scale; for example, "At my work, I feel that I am bursting with energy" (Schaufeli & Bakker, 2003). The same 7-point response format was

adopted as was used for emotional exhaustion. The scale had sufficient reliability for leaders (T1 and T2: Cronbach's α = .92) and followers (Cronbach's α = .93).

Emotional self-efficacy

Leader emotional self-efficacy was assessed with the Occupational Emotional Self-efficacy scale (Loeb, Stempel, & Isaksson, 2016), measuring a person's confidence in their ability to perceive, understand, regulate, and use emotional information at work. These features, a particular focus on the work context, as well as a distinction in self- vs. other-oriented emotions (cf. Choi, Kluemper, & Sauley, 2013), guided the development of this eight items scale. The scale has been shown to differentiate from cognitive, task-oriented occupational self-efficacy, and is related to, yet distinct from occupational social self-efficacy. Negative correlations with emotional exhaustion and positive correlations with work engagement and job satisfaction indicate good construct validity (Loeb et al., 2016). The scale contained four other-oriented items, for example, "How confident are you in your ability to correctly identify when other people are feeling negative emotions at work?"; and four self-oriented items, for example, "How confident are you in your ability to correctly identify your own negative emotions at work?" Items were rated on a 5-point Likert-type scale ranging from 0 (*no confidence at all*) to 4 (*complete confidence*). The overall reliability of the scale was good (Cronbach's α = .81).

2.2.3.4 Controls

Autonomy

Autonomy was measured with a four item scale (Guest, Isaksson, & De Witte, 2010) on a 5-point Likert-type response format ranging from 1 (very seldom or never) to 5 (very often or always). A sample item is "I can plan my own work." Reliability was good (Cronbach's α = .80).

Workload

Workload was measured with a validated five item scale (Spector & Jex, 1998) with sufficient reliability (Cronbach's α = .77). Participants responded on the same 5-point Likert-type scale as was used for autonomy; for example, "How often does your job require you to work very fast?"

Tenure with the leader

We used a single item measure ("How long have you been working under the supervision of this leader?") to assess followers' tenure with their current leader.

2.2.3.5 Analysis

Considering the reported differences in work engagement between participants from Sweden and Germany, we controlled for country. To rule out gender effects in our predominantly female sample (e.g., Doherty, Orimoto, Singelis, Hatfield, & Hebb, 1995; Hoffman, 1977; Posig & Kickul, 2004), we added leaders' gender as a control variable.

Because autonomy and workload are important predictors for emotional exhaustion and work engagement within job demands–resources theory (Bakker & Demerouti, 2014), we included leaders' autonomy and workload as control variables. Further, we wanted to rule out the alternative hypothesis that congruent levels of exhaustion and engagement between leaders and followers within the same work environment are caused by shared job characteristics (Westman, 2001). As we supposed the proximity to the leader in terms of social interaction to be a prerequisite for crossover to occur (Bakker & Schaufeli, 2000), we controlled for followers' tenure with their leader. Finally, we controlled for the auto-regressor (i.e., leaders' emotional exhaustion or work engagement) at time one. Therefore, we looked at the effects of followers' well-being on changes in leaders' well-being over time.

We tested our hypotheses using hierarchical linear regression in SPSS (22). All predictors were centered at their mean (Aiken & West, 1991), and the follower variables emotional exhaustion, work engagement, and tenure with

the leader were aggregated at the group level. To test whether this aggregation was justified, we calculated ICC(1) and rwg values (LeBreton & Senter, 2008). ICC(1)s indicated medium effects of team membership on emotional exhaustion (ICC(1)=.08), and large effects on work engagement (ICC(1)=.52), and tenure with the leader (ICC(1)=.24, Murphy, Myors, & Wolach, 2009). Further, we examined within-group agreement with rwg(J) values. With .73 for emotional exhaustion, and .94 for work engagement, the median values across teams were above the generally accepted cutoff score of .70 (LeBreton & Senter, 2008). One-way ANOVAs showed that mean scores differed significantly across teams with regard to emotional exhaustion ($F(67, 244) = 5.95$, $p < .001$), work engagement ($F(67, 242) = 1.49$, $p = .015$), and tenure ($F(67, 231) = 2.31$, $p < .001$).

2.2.4 Results

2.2.4.1 Descriptive statistics

Means, standard deviations, and intercorrelations for all variables included in the study can be found in Table 3. The outcome variables leader emotional exhaustion and work engagement at time two were moderately negatively correlated ($r = -.57$, $p < .001$). This pattern was found for the relationship between emotional exhaustion and work engagement on the team level ($r = -.46$, $p < .001$) as well. Follower work engagement at time one correlated positively with leader work engagement at time two ($r = .38$, $p = .002$). The correlations between leader and follower emotional exhaustion were not significant. Correlations with country confirm the abovementioned differences between German and Swedish participants in terms of work engagement. Please refer to Table 1 for other (significant) correlations.

Table 3. Summary of Means, Standard Deviations, and Intercorrelations of Study Variables

	Variables	1	2	3	4	5	6	7	8	9	10	11	M	SD
1	Country[1]												0.76	0.43
2	Team Tenure with Leader (T1)	.27*											4.56	2.37
3	Team Emotional Exhaustion (T1)	.05	-.09										2.40	0.91
4	Team Work Engagement (T1)	-.52**	-.23	-.46**									3.87	1.11
5	Leader Gender[2]	-.13	-.13	-.03	-.03								0.36	0.48
6	Leader Autonomy (T1)	-.07	.01	-.22	.25*	-.08							3.67	0.63
7	Leader Workload (T1)	.07	-.06	.12	.01	-.04	-.26*						3.87	0.57
8	Leader Emotional Self-Efficacy (T1)	.07	.04	-.04	.06	-.25*	.39**	.06					2.81	0.46
9	Leader Emotional Exhaustion (T1)	-.01	.13	.00	-.09	-.27*	-.33**	.37**	-.05				2.32	1.29
10	Leader Emotional Exhaustion (T2)	-.05	.06	.06	-.13	-.28*	-.17	.29*	.10	.72**			2.25	1.37
11	Leader Work Engagement (T1)	-.18	-.12	-.03	.22	.02	.44**	-.25*	.27*	-.59**	-.48**		4.15	0.97
12	Leader Work Engagement (T2)	-.28*	-.18	-.11	.38**	.01	.33**	-.14	.10	-.51**	-.57**	.78**	4.18	0.97

*Note. T1 = time one, T2 = time two. [1]0 = Sweden, 1 = Germany. [2]0 = female, 1 = male. N = 67. *p < .05. **p < .01. two-sided.*

2.2.4.2 Main effects

Results predicting leaders' emotional exhaustion at time two can be found in Table 4. The hypothesized positive lagged relationship between followers' and leaders' emotional exhaustion was not significant (β = .07, *p* = .458). Therefore, Hypothesis 1a had to be rejected. Table 5 summarizes all results predicting leaders' work engagement at time two. As hypothesized, followers' work engagement at time one was positively related to leaders' work engagement at time two (β = .20, *p* = .035) after controlling for country, follower tenure with the leader, leader gender, workload, autonomy, and work engagement at time one. Hypothesis 1b was thus confirmed. Except for the relationship with the respective auto-regressor, leaders' work engagement (β = .78, *p* < .001), or emotional exhaustion (β = .71, *p* < .001) at time one, no other significant main effects between control, predictor, and outcome variables were found.

Table 4. Results of Hierarchical Multiple Linear Regression Analysis Predicting Leader Emotional Exhaustion

	Leader Emotional Exhaustion (T2)		
	Step 1	Step 2	Step 3
Step 1: Control Variables			
Country[1]	-.02	-.04	-.04
Leader Gender[2]	-.08	-.05	-.04
Leader Autonomy (T1)	.06	.03	-.02
Leader Workload (T1)	.04	.01	-.01
Team Tenure with Leader (T1)	-.04	-.03	-.02
Leader Emotional Exhaustion (T1)	.71***	.73***	.72***
Step 2: Main Effects			
Leader Emotional Self-Efficacy (T1)		.12	.04
Team Emotional Exhaustion (T1)		.07	.11
Step 3: Interaction			
Team EE x Leader ESE			.20*
Additional Information			
R^2	.54	.55	.58
F	11.58***	8.90***	8.79***
ΔR^2		.02	.03
Δ F		.94	4.11*

*Note. Standardized β regression coefficients are displayed. EE = emotional exhaustion, ESE = emotional self-efficacy. T1 = time one, T2 = time two. [1]0 = Sweden, 1 = Germany. [2]0 = female, 1 = male. N = 67. *p < .05. **p < .01. ***p < .001.*

Table 5. Results of Hierarchical Multiple Linear Regression Analysis Predicting Leader Work Engagement

	Leader Work Engagement (T2)		
	Step 1	Step 2	Step 3
Step 1: Control Variables			
Country[1]	-.13	-.01	-.01
Leader Gender[2]	-.01	-.03	-.03
Leader Autonomy (T1)	-.00	-.00	.00
Leader Workload (T1)	.06	.07	.06
Team Tenure with Leader (T1)	-.05	-.03	-.03
Leader Work Engagement (T1)	.77***	.78***	.78***
Step 2: Main Effects			
Leader Emotional Self-Efficacy (T1)		-.13	-.13
Team Work Engagement (T1)		.20*	.20*
Step 3: Interaction			
Employee WE x Leader ESE			.02
Additional Information			
R^2	.63	.67	.67
F	17.17***	14.77***	12.92***
Δ R^2		.04	.00
Δ F		3.42*	.04

*Note. Standardized β regression coefficients are displayed. WE = work engagement, ESE = emotional self-efficacy. T1 = time one, T2 = time two. [1]0 = Sweden, 1 = Germany. [2]0 = female, 1 = male. N = 67. *p < .05. **p < .01. ***p < .001.*

2.2.4.3 Interaction effects

The interaction effect for leaders' emotional self-efficacy and followers' emotional exhaustion was significant (β = .20, p = .047). As depicted in Figure 2, the relationship between team and leader emotional exhaustion was stronger when leaders' emotional self-efficacy was high. Simple slope tests revealed that the interaction only predicted levels of leader emotional exhaustion at high levels of the moderator (t = 2.09, p = .041), and not at low levels of the moderator (t = -0.70, p = .489); that is, one standard deviation above or below the mean. Hypothesis 2a was thus accepted. The relationship between followers' and leaders work engagement was not moderated by leaders' emotional self-efficacy (β = .02, p = .849). Hypothesis 2b was rejected accordingly.

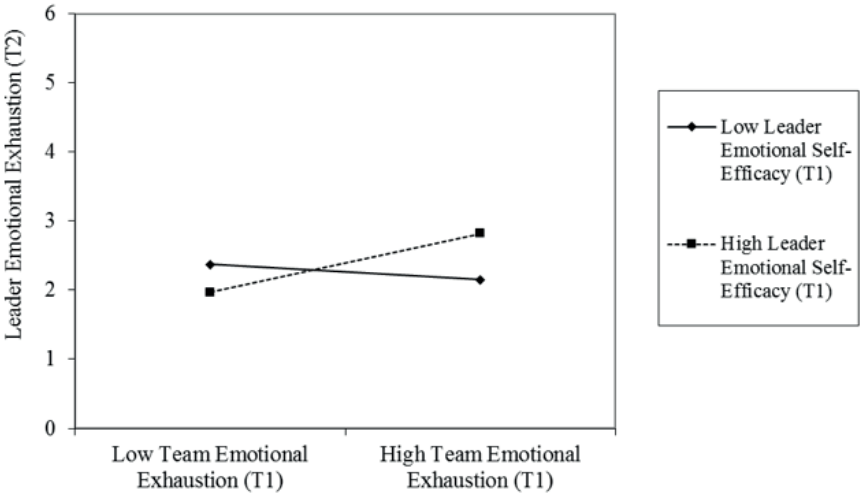

Figure 2. Interaction effect of team emotional exhaustion and leader emotional self-efficacy at time one (T1) on leader emotional exhaustion at time two (T2), eight months later.

2.2.4.4 Additional Analyses

To compare synchronous with longitudinal effects, we ran two additional exploratory regression analyses including all control variables. Neither at T1 nor at T2, did team members' level of emotional exhaustion significantly predict leaders' emotional exhaustion (T1: β = -.10, p = .391; T2: β = .02, p = .885). Team members' work engagement did not show a significant relationship to leaders' work engagement (T1: β = .06, p = .677; T2: β = .20, p = .154). None of the tested interaction effects reached significance (emotional exhaustion for T1: β = .02, p = .864, for T2: β = .07, p = .640; work engagement for T1: β = .22, p = .071; T2: β = .12, p = .363).

Further, we tested for reverse crossover effects (i.e., from leaders to followers), running two more exploratory regression analyses. We included leader emotional exhaustion or work engagement at time one as a predictor and team emotional exhaustion or work engagement at time one as a control variable. Leaders' emotional exhaustion at time one did not predict followers' emotional exhaustion at time two (β = .05, p = .515). Nor did leaders' work engagement at time one predict followers' work engagement at time two (β = .06, p = .275).

2.2.5 Discussion

The main goal of our study was to examine leadership as a social interaction process with a particular focus on health outcomes on the leader level. To our knowledge, this study is the first to examine crossover processes of work engagement and emotional exhaustion between followers and leaders in a longitudinal design. We further tested whether crossover processes were moderated by leaders' emotional self-efficacy. Our results suggest that work engagement does cross over directly from followers to leaders over time, whereas the crossover of emotional exhaustion is moderated by leaders' emotional self-efficacy. This finding supports a leadership model where followers play an active part beyond solely "receiving" leadership efforts (Uhl-Bien et al., 2014). It demonstrates, further, that followers shape leaders' work experience, and can affect leaders' well-being at work. Leaders' individ-

ual differences in terms of emotional self-efficacy appear to play a role in the perception and crossover of strain.

In the current study, work engagement of followers did cross over to leaders over a period of eight months. We did not find the direct crossover of emotional exhaustion from followers to leaders, which has been found within work teams in earlier research (Bakker et al., 2009; Westman & Bakker, 2008). One reason for the lack of a main effect could be the context of our investigation (i.e., crossover from followers to leaders rather than within work teams). The greater power distance, as well as the qualitatively different and potentially limited number of interactions between leaders and followers, as opposed to colleagues, could create a greater emotional distance, not allowing for the direct crossover of negative emotions or strain (Bruk-Lee & Spector, 2006; Frone, 2000; Hershcovis & Barling, 2010).

It seems plausible that emotionally exhausted followers are more likely to share their negative feelings, attitudes, and experiences with colleagues rather than their boss, to whom they want to appear competent, motivated, and resilient. It may further be speculated whether a more sensitive measure of emotional strain on the leaders' side could have led to significant results, following the rationale that a comparatively stronger strain in followers (i.e., emotional exhaustion) leads to a comparatively weaker strain in leaders (e.g., emotional irritation; Mohr, Müller, Rigotti, Aycan, & Tschan, 2006). Another explanation could be that followers are emotionally exhausted because of a high workload (Sonnentag, Kuttler, & Fritz, 2010), whereas the leader's workload is reduced by the teams' efforts, so that the leader's level of emotional exhaustion is not affected.

Although we could not confirm the direct transfer of emotional exhaustion over time, we did find that leaders' emotional self-efficacy moderated the crossover of emotional exhaustion from followers to leaders. This supports our notion of an empathic crossover process: Leaders' who consider themselves to be particularly competent in the emotional area pay more attention to emotional expressions of their staff (Bandura, 1997), are more likely to detect negative emotions (Mayer & Salovey, 1993), and are, in turn,

more likely to experience negative emotions themselves (Bakker & Schaufeli, 2000). It is also possible that leaders with high emotional self-efficacy personalize the negative emotional experiences of their followers, and therefore themselves develop negative symptoms over time (Bandura et al., 2003).

Leaders' emotional self-efficacy did not play a role in the crossover of work engagement, indicating that a different mechanism (e.g. emotional contagion) could be at work here. Further, this finding could be attributed to the leadership role. Followers could be particularly expressive in their work engagement toward their leaders to prove their commitment and positive attitude at work (Wayne & Green, 1993). This would make work engagement especially easy to detect for leaders, regardless of their emotional ability (beliefs). Further, it is possible that leaders, duly or unduly, attribute their followers' work engagement to their own leadership success. This feeling of personal accomplishment could, in turn, cause leaders to experience higher work engagement themselves (Hakanen et al., 2008). Moreover, from a cognitive perspective, leaders perceiving their team as engaged may worry less about team performance, and focus more on their own tasks, experiencing higher work engagement (Schaufeli et al., 2002).

In summary, we found different effects with regard to the crossover of work engagement and emotional exhaustion from followers to leaders. Whereas work engagement crossed over directly, the crossover of emotional exhaustion was moderated by leaders' emotional self-efficacy. In interpreting these results, one should consider differences in the consistency of engagement and exhaustion within teams. Work engagement seemed to be more of a collective experience, whereas emotional exhaustion was more idiosyncratic, rendering the engagement climate more reliable than the emotional exhaustion climate. Further research is needed to identify boundary conditions and determinants of crossover in different contexts, as well as underlying mechanisms of crossover processes.

2.2.5.1 Limitations and directions for future research.

Whereas the methodological advantages of the current study lie in its longitudinal design and in the information obtained from different sourc-

es, limitations must clearly be noted. The main limitation is the small sample size, caused by the data structure and dropout between data collection points. A larger sample would have been preferable, however, it was not viable in our case, considering the efforts spent on recruiting the relatively large primary sample. Further, one should note the heterogeneity of the sample in terms of nationality and occupation. This diversity could mask potential effects. Nevertheless, we decided against separate analyses for the different subgroups because this would have diminished the sample size considerably.

Another potential weakness of the study is the item selection in our outcome variables. For work engagement, we excluded the absorption dimension, as it has been suggested to be distinct from the core dimensions (vigor, dedication), and to possibly be a consequence of engagement rather than a constitution component (Salanova, Llorens, Cifre, Martínez, & Schaufeli, 2003; Schaufeli et al., 2002). For emotional exhaustion, we used a shortened version of the Maslach Burnout Inventory, which has been used in past research (Kinnunen et al., 2014).

By aggregating follower data on the group level, we lost important information. It is possible, for example, that two teams had the same average level of strain or engagement, however, differed in the variability of strain or engagement among team members. Future research should identify whether different distributions of strain and engagement within work teams have differential effects on the team leader. It would be interesting to examine, for example, whether crossover effects are stronger when all team members are equally engaged, or when one team member experiences very high levels of work engagement while the rest of the team does not. Previous research on the contagious nature of burnout and engagement makes the first assumption more plausible (e.g. Bakker et al., 2006), but more research is still needed to identify potential mediators and to build a more comprehensive understanding of the nature of crossover. Alternatively to the aggregated regression approach, multilevel modelling could offer some benefits. Due to power restrictions, we were unable to estimate a robust model with the current data set. The fact that we were exclusively interested in the level 2 relationships somewhat mitigates this concern.

In the current study, we focused on crossover from followers to leaders. Even though we did not find any effects from leaders to followers in our exploratory analyses, future research could investigate mutual crossover processes (Westman & Etzion, 1999) more extensively (i.e., in a longitudinal design, or by including different moderators). Researchers should moreover consider that leaders, in many cases, are followers too. Inserting an additional level of analysis could yield interesting results with regards to the *top-down* versus *bottom-up* nature of crossover. It could be, for example, that engagement crosses over more easily from followers to leaders, whereas the direction of strain crossover is reversed.

Next to the targets of crossover, the mental states under examination can be discussed. In our study, we only looked at concordant psychological states in leaders and followers, whereas research on the crossover of converse states also looks promising (Bakker et al., 2006).

We did not measure the amount and type of interactions between leaders and followers, although it seems likely that this could impact crossover processes (Bakker & Schaufeli, 2000). It would be interesting to examine in the form of a diary study, for example, if and how the nature of leader–follower interactions affect crossover.

Additionally, examining the role of power distance could yield interesting results. The gap in resources and power, which is inherent to the leader–follower relationship, may cause followers to behave differently toward leaders than toward colleagues (Frone, 2000; Hershcovis & Barling, 2010), and to express more work engagement and less exhaustion toward their leaders, who therefore *pick up* on positive rather than negative emotions more easily.

Next to the quantity and quality of social exchanges, other potential moderators should be tested, particularly with regard to individual differences in the emotional domain. In this study, we hypothesized that leaders' emotional self-efficacy would make them more susceptible to crossover processes through an enhanced focus on followers' emotions, enabling correct identification of mental states (Bandura, 1997; Mayer et al., 2003). It would be very interesting to see, however, whether the actual ability to

manage one's own and others' emotions could act as a buffer in the crossover process, particularly with regard to strain. Even though efficacy beliefs have shown a positive relationship with actual performance (Judge & Bono, 2001), it has been argued that the two constructs are qualitatively different from each other, the former being more dynamic than the latter (Kirk et al., 2008). Therefore, adding a measure of emotional ability, and comparing it to efficacy could be fruitful.

Further, one can distinguish between self-efficacy with regard to one's own and others' emotions (Loeb et al., 2016). As factor analysis did not support this two-factor model in the current sample, we used the combined measure of emotional self-efficacy. Future research could look at different effects of leaders' confidence in recognizing and managing their own, as opposed to others' emotions. In the context of job demands–resources theory (Bakker & Demerouti, 2014), it should be examined whether followers' psychological states act as a direct social stressor or resource for leaders, or whether they act via an impact on leaders' workload.

Our divergent findings with regard to the crossover of emotional exhaustion and work engagement hint at potentially different mechanisms in the crossover of strain versus engagement, at least in a leadership context. Our results support the notion of empathic crossover in the case of emotional exhaustion and a direct contagion process in the case of work engagement. Future research should look more closely at underlying cognitive and affective processes of crossover, such as empathic reactions versus unconscious induction (Hatfield et al., 1994; Hsee et al., 1990), to clarify whether differential mechanisms in the crossover of strain versus engagement exist.

Finally, our time lag of eight months was chosen mainly out of practical considerations. The fact that we found only one crossover effect from followers to leaders within time (work engagement, T2), confirms our assumption that followers' mental states can pose a demand or resource for leaders, whose prolonged exposure to these job aspects can result in strain or engagement. Whereas we recorded direct, immediate and lagged crossover effects for work engagement, we could not confirm the same for emotional

exhaustion. The question, which timeframes are necessary for crossover of exhaustion and engagement to occur in a leadership context, needs to be explored further.

2.2.5.2 Implications for research and practice

By shifting the focus from followers to leaders (in terms of health outcomes), and further, demonstrating that followers influence their leaders' work experience, we add to the development of a more integrative leadership literature, which considers leaders and followers alike. We emphasize that health outcomes on a leader level should receive more empirical attention. Interpreting our results within the framework of job demands–resources theory (Bakker & Demerouti, 2014), social interactions with followers can pose a considerable resource, or a work demand, for leaders, affecting their experience of well-being and strain. Requirements comparable to those faced by followers in occupations with high emotional labor demands are innate to the leadership role (Humphrey et al., 2008). Therefore, whether these interactions cause positive (engagement) or negative (exhaustion) outcomes in leaders may depend partially on followers. Both leaders and followers contribute mutually to the social interactions at work, and thus jointly design their shared environment (e.g., Day, 2001; Gerstner & Day, 1997).

Next to fostering an interactive understanding of leadership, our study adds to the crossover literature. To our knowledge, this is the first study to examine crossover in the workplace in a longitudinal design. Our results suggest that crossover does not only occur among spouses or colleagues, but also between leaders and followers. Further, different mechanisms may be at work here because engagement did cross over directly, whereas the crossover of exhaustion was moderated by leaders' emotional self-efficacy.

Our research offers several managerial implications, particularly with regard to organizational health management. From an organizational perspective, leaders are often considered promoters of follower health. Programs aimed at psychological resilience and health should also consider reverse effects and adopt a more holistic approach to creating healthy working environments. Particularly, social relationships at work should be targeted as

stressors or leveraged as resources because they play an important role in the development of negative symptoms, such as burnout (Buunk & Schaufeli, 1993).

An additional insight lies in the potential effects of individual differences in the crossover process, namely emotional self-efficacy. Whereas the trend to promote a more emotion-focused leadership style (Goleman, Boyatzis, & McKee, 2001) may be beneficial to followers (e.g., Harms & Crede, 2010; Palmer et al., 2000; Rubin et al., 2005), potentially harmful effects on the leader should be considered. For example, leaders' specific work demands in terms of emotional labor (Humphrey et al., 2008) can take an emotional toll (Bandura et al., 2003).

Our results imply that leaders' emotional self-efficacy can be interpreted in terms of vulnerability. Although this result is puzzling to some extent, as leaders with high emotional self-efficacy should not only be apt at interpreting but also managing own and others' emotions, it is in line with a growing body of research examining negative consequences of self-efficacy. Examples of negative outcomes are overconfidence (Vancouver & Kendall, 2006), workaholism (Del Libano, Llorens, Salanova, & Schaufeli, 2010) and vulnerability to depression over time (Bandura et al., 2003).

It could therefore be counterproductive to enhance leaders' emotional abilities in a team of exhausted followers if the result is an exhausted leader rather than an exhilarated team. In this context it is important, however, to differentiate between identification and management of emotions (Mayer & Salovey, 1993). Effective emotion management could buffer the potentially harmful effect of perceiving negative emotions. We would like to emphasize however, that occupational emotional self-efficacy can still have positive outcomes in an organizational setting (e.g. performance, identification) that have not been the focus of the current study. Further research is needed to arrive at a more definitive conclusion in this regard.

2.2.5.3 Conclusion

In summary, our study partially supports earlier findings which imply that strain as well as engagement can cross over from work teams to individuals. We extend previous research by shifting our focus from crossover within work teams to crossover from followers to leaders, showing that crossover works in this context as well. This study adds to a leadership literature with an increasing focus on the *mutual* influence between leaders and followers, and emphasizes that followers play an important part in shaping leaders' work experience.

2.3 What makes healthy leaders? A Systematic Review and Research Agenda

2.3.1 Abstract

In this article we present the results of a systematic review of three decades of research on leaders' health. The identification of relevant predictors for leaders' health from 184 empirical articles and the subsequent categorization in different clusters provide valuable insights to guide future theory, research, and organizational health management practice. The majority of articles included in this review had a cross-sectional design (144/184) and used single-source measurements (132/184). 107 studies examined leaders' mental, 31 studies examined leaders' physical well-being, and 46 studies examined both. In categorizing predictors, we apply and extend the model on managerial stress by C. L. Cooper, Sloan and Williams (1988). Further, by including results on health promotion (e.g. work engagement, energy) as compared to ill-health, we integrate current approaches such as job demands resources theory and positive psychology in our understanding of leaders' health. We discuss our findings in terms of methodological and theoretical shortcomings of existing work, and outline a brief agenda to inspire future research. Main findings include the relative lack of followers' role in the leadership process, as well as interpersonal factors that impact leaders' health and wellbeing. Further, there is a clear need to distinguish more explicitly

between stress and antecedents of stress, as well as to conduct more longitudinal and multi-source studies in order to uncover causal relationships and examine changes in leader health over time.

2.3.2 Introduction: What makes healthy leaders? A Systematic Review and Research Agenda

While the majority of research on (mental) health at work is focused on employees in general, recent calls in the literature demand a more thorough investigation of *leaders'* (mental) health (Barling & Cloutier, 2017). As the literature on this topic is very scattered and heterogeneous in terms of content and quality, it is crucial to build a more systematic understanding of the predictors and processes that are related specifically to the health of leaders for several reasons.

First, leadership behavior is linked to follower health (Kuoppala, Lamminpää, Liira, & Vainio, 2008; Skakon, Nielsen, Borg, & Guzman, 2010), and frameworks with a particular focus on health-promoting leadership have been developed (Eriksson, Axelsson, & Axelsson, 2010; Franke, Felfe, & Pundt, 2014; Vincent, 2012). Examining this trend on health promotion through leadership, the health and mental well-being of leaders quickly emerges as a central prerequisite for healthy teams and organizations. Leaders with an impaired health status are unable to promote follower health, and, even worse, impact followers negatively (Huang, Wang, Wu, & You, 2016).

Second, the specific demands of the leadership role are not understood very well yet. While a myriad of research has examined general work stressors, such as workload, autonomy, and control (Van der Doef & Maes, 1999), little is known about the strains resulting from high quality leadership behavior (Barling & Cloutier, 2017).

Third, the intermediary position between the organization's executive team and the workforce subjects leaders to an unfavorable combination of high responsibility paired with limited control (Karasek, 1979). Further, a combination of high demands and high resources is characteristic for the leader-

ship role (Hambrick, Finkelstein, & Mooney, 2005). While leaders are faced with a high number of responsibilities that could lead to potential strain, at the same time, they have additional resources at their disposal that followers have no access to (e.g. decision authority, budget control, monetary benefits). It is thus interesting to examine, which health-related consequences this unique combination of control, resources, and demands has.

Last but not least, the literature that has examined leaders' health to date, is very heterogeneous in terms of theory, methodology, and findings. While some studies report epidemiological evidence (see Zimber, Hentrich, Bockhoff, Wissing, & Petermann, 2015 for a review), others focus solely on biological factors, personality, or work characteristics respectively.

The central aim of this review is therefore, to integrate and structure the existing literature to provide a clear overview of general and specific factors that contribute to leaders' health. Drawing on established classifications of stressors (C. L. Cooper, Sloan, & Williams, 1988; Williams & Cooper, 1998), we expand and specify existing models by integrating demands specific to the leadership role. Further, by considering both health-hampering as well as health-promoting processes, we place our findings in the context of Job Demands Resources Theory (Bakker & Demerouti, 2014).

Our main contribution lies in the conceptual integration of the heterogeneous literature on leaders' health between 1986 and 2016. By systematically assessing the quality of all articles included in this review, and adding a quantitative dimension to our qualitative findings, we identify theoretical and methodological shortcomings of existing work. This opens opportunities for future research (Barling & Cloutier, 2017) and contributes to the advancement of theory and organizational health management practice.

Our article contributes to the literature on leadership, followership and health. Next to the importance of leaders' behavior and health for their followers (Skakon et al., 2010), we highlight outcomes for leaders themselves. We emphasize the interpersonal demands of the leadership role (i.e. the interaction between leaders and followers) as a unique job characteristic with related health outcomes. In terms of practical implications, our review offers

evidence-based indications for occupational health promotion for leaders, and in consequence all employees (see Figure 3 for a brief overview).

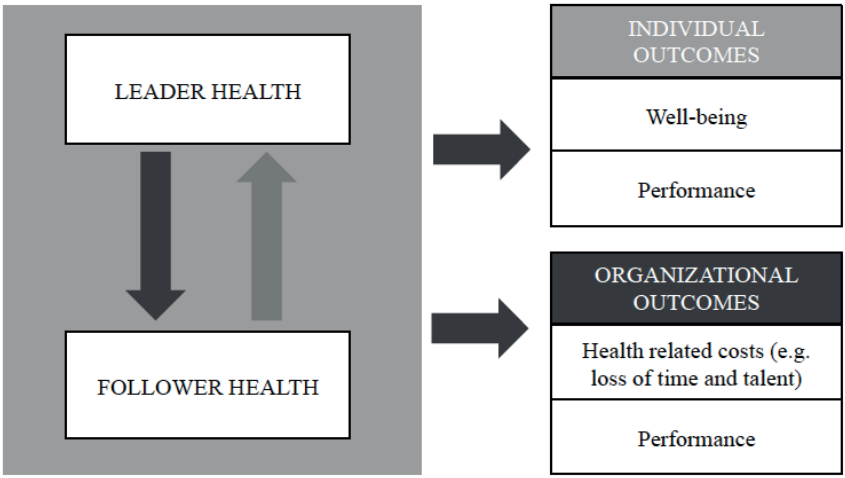

Figure 3. Implications of leaders' health in the organizational context.

2.3.2.1 Leadership and health

In this article we use a narrow definition of leadership and a broad definition of health. We define a leader as an employee within an organization who has legitimate position power (Raven, Schwarzwald, & Koslowsky, 1998) over other employees, i.e. subordinates. The focus in this definition lies on the formal, hierarchical reporting relationship between leaders and followers, and thus does not include spiritual, ideological, or peer leaders.

Rather than defining health in clinical or pathological terms, our understanding of health is rooted in positive psychology and thus describes a general state of physical and mental well-being (Diener, 1984; Diener, Suh, Lucas, & Smith, 1999; Jayawickreme, Forgeard, & Seligman, 2012). The specific dimensions of health that we applied in this review, and that reflect this understanding, include positive and negative indicators of mental (e.g. work engagement, burnout) and physical well-being (e.g. healthy work attendance, cardiovascular disease). We use the terms health and well-being

interchangeably, however, we differentiate between mental and physical health. Mental health indicators include all reports, mostly self-reports, of mental phenomena (e.g. engagement, burnout, anxiety, depression). Physical health indicators include both self-reports of physiological health (e.g. reports of symptoms), as well as physiological measurements (e.g. heart rate, blood pressure).

2.3.2.2 Why focus on leaders' health?

Why should health-determinants for leaders be any different compared to employees without leadership responsibilities? While we do not debate the fact that leaders might have the same or even better health status than followers (Skakon, Kristensen, Christensen, Lund, & Labriola, 2011; Zimber et al., 2015), we do believe that leaders face several idiosyncratic challenges and demands that influence their health in ways which are different from the people they lead.

For example, leaders occupy an intermediary position between the organization's executive team and the workforce. The former relies on leaders to realize (financial) targets, and the latter depends on their leaders to create a positive work environment and enable successful careers. This combination of high responsibility for organizational and individual outcomes (Grunberg, Moore, & Greenberg, 2006), and limited control due to environmental constraints (Conway & Monks, 2010; R. T. Lee & Ashforth, 1993 a), constitutes a particularly high risk factor (Karasek, 1979) in terms of job-related well-being and health (Nixon, Mazzola, Bauer, Krueger, & Spector, 2011). Further, the nature of leaders' work is inherently interpersonal, adding an additional dimension of complexity to their job. Not only do leaders have to deliver performance targets, and coordinate own and others' tasks, they also have to deal with unpredictable follower behaviors, and manage different stakeholder concerns. This can require a substantial amount of emotional labor (Humphrey, Pollack, & Hawver, 2008). Further, it creates strong interpersonal and environmental uncertainty (Boyatzis, Smith, & Blaize, 2006; McClelland, 1974) which can result in role conflict and ambiguity (Katz & Kahn, 1966).

Looking at these exemplary challenges, and considering the importance of having healthy leaders as drivers of organizational performance and health (MacIntosh, MacLean, & Burns, 2007; Quick, Macik-Frey, & Cooper, 2007), it is crucial that we gain a better understanding of the specific demands and resources responsible for their well-being. We expect that especially the interpersonal elements of leadership, in combination with other demands, constitute potential health risks. With this review we aim to gain a comprehensive understanding of causal relationships between demands, resources and leaders' health. Particularly, we address the research question: What are predictors of leaders' health?

2.3.3 Method

We conducted a systematic review of the literature between 1986 and 2016 using the search engines Google Scholar and Web of Science. Inserting a combination of the search terms *leader, manager, executive, supervisor* and *emotional exhaustion, burnout, work engagement, (mental, psychological) health, stress, strain, well-being, blood pressure, heart rate, cortisol, cardiovascular disease, musculoskeletal, headache, ulcer, absenteeism, presenteeism, health behavior, disease, illness, sickness, work ability, (psycho) therapy, early retirement, sick leave, and coronary heart disease* in English and German resulted in 46.320 hits.

Additionally, we manually examined all Volumes of The Academy of Management Executive, the Journal of Managerial Psychology, the Academy of Management Journal, the Leadership Quarterly, and Work and Stress. This search resulted in an additional 18 hits. In the selection of these journals, we focused mainly on publications with a managerial rather than a health emphasis as we deemed it more likely that publications with a managerial focus would be overlooked in our search (i.e. it is more likely that the sample is not specified in the title or abstract of a publication rather than the dependent variable). The search was terminated on July 20th 2016.

2.3.3.1 Inclusion and exclusion criteria

Scanning the titles and, if applicable, the abstracts of retrieved hits for health-related research, we identified 615 abstracts as relevant to our research question. We then applied a systematic selection procedure in seven consecutive steps as displayed in Figure 4. First, we eliminated 163 studies that were not based on quantitative data, such as single case and interview studies. Second, we eliminated 79 studies that were not published in peer-reviewed journals (e.g. dissertations, conference proceedings). Third, we eliminated 15 articles that were written in a language other than English or German. Fourth, we eliminated 72 studies because the dependent variable did not fit our definition of health, or was not examined on a leader level. Fifth, we eliminated 9 studies that did not distinguish between data collected from leaders and data collected from followers. Sixth, we eliminated 90 studies that did not examine a correlational or causal research question, but rather described health-levels within a specific population. Finally, we eliminated three studies that did not report results appropriately (e.g. p-values were missing). As a result 184 articles were retained and reviewed.

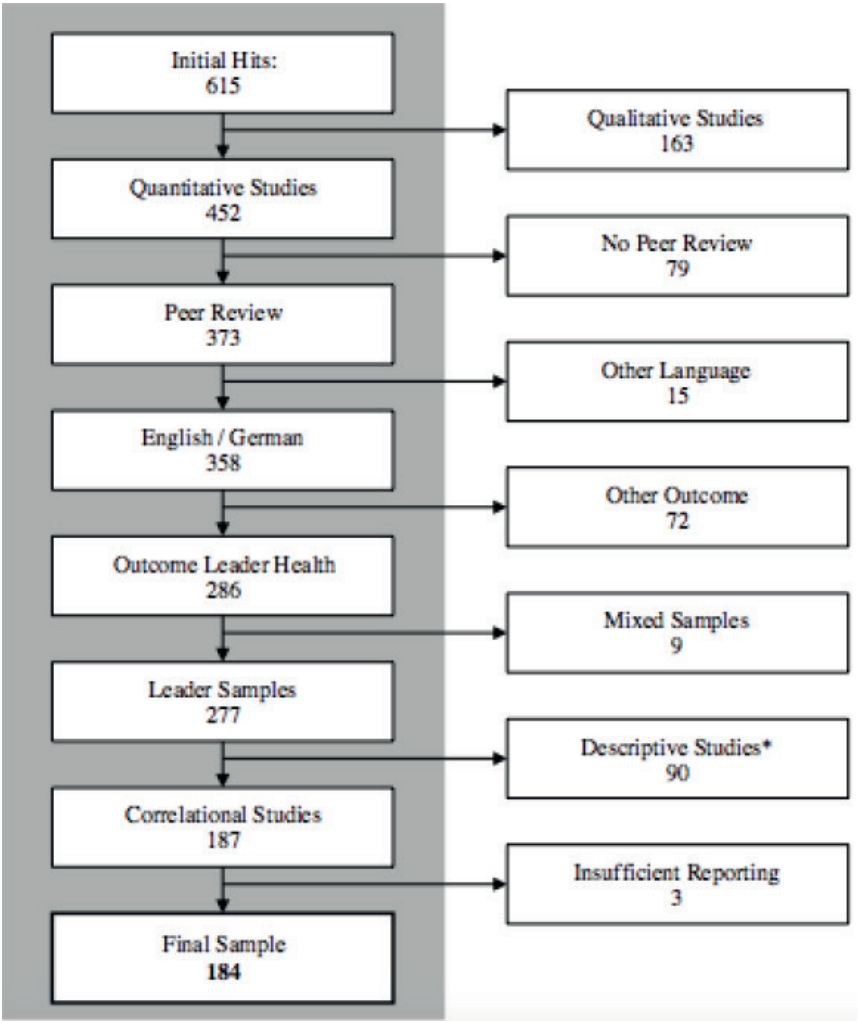

Figure 4. Systematic process of article selection.

**Next to descriptive studies, one longitudinal study examining developmental patterns of burnout and work engagement over time (Mäkikangas, Feldt, Kinnunen, & Tolvanen, 2012) was excluded as it did not contain a concrete predictor for burnout or work engagement.*

2.3.3.2 Quality assessment

In order to assess the quality of the articles included in this review, and adequately interpret our results, we systematically rated the studies in terms of design, methodology, and analysis. We based the evaluation criteria which are presented in Table 6 on previous research (de Lange, Taris, Kompier, Houtman, & Bongers, 2003; Van Laethem, Beckers, Kompier, Dijksterhuis, & Geurts, 2013), as well as the reporting standards of the American Psychological Association (Applebaum, Cooper, Maxwell, Stone, & Sher, 2008). We focused particularly on the extent that one can infer causality from the respective design (cross-sectional, longitudinal, complete panel, experiment, or diary), the measurement (single vs. multiple sources), as well as the analyses (bivariate vs. multivariate procedures). Both authors rated all 184 studies. The inter-rater agreement (J. Cohen, 1968) was 96 %. All differences were resolved during constructive discourse and re-examination of the original articles in question.

Table 6. Criteria for Evaluating the Methodological Quality of Studies Included in our Review.

	* 1 star	** 2 stars	*** 3 stars
Design	Cross-sectional	Incomplete panel design (≥1 central study variable not measured on all occasions), multi-level design	Complete panel design (at least two central study variables measured at both occasions, experimental, diary, or intervention study
Measures	Single source (self-report)	Two sources (self-report and other report OR objective indicator)	Multiple sources (self-report, other report AND objective indicator)
Analysis	Bivariate relationships (correlations, ANOVA)		Multivariate relationships (MANOVA, Regression Analysis, SEM, MLM)

Note. Several studies measured data at different time points, however analyzed their data cross-sectionally. They nevertheless received two stars in the category design. The same applied to studies controlling for a multi-level data structure.

We checked whether any studies by identical authors used the same sample. For an overview of studies that used identical or overlapping samples, please refer to Table 7. We did not want to exclude studies based on similar samples, as our approach is qualitative. Furthermore, even though some studies did use the same samples, they examined different predictor or outcome variables.

Table 7. Overview of Studies with Identical or Overlapping Samples.

Shared Sample	Authors and Year	Outcome Variables
162 department heads and 1297 faculty members of four US universities	Bernerth & Hirschfeld (2016)	Psychological Well-Being: Positive affect, job stress
	Bernerth, Whitman, Walker, Mitchell, & Taylor (2016)	Psychological Well-Being: Occupational satisfaction, state-based positive affect, emotional exhaustion
1125 US police executives and 1427 county sheriffs	Crank, Regoli, Hewitt, & Culbertson (1993)	Work Stress
	Crank, Regoli, Hewitt, & Culbertson (1995)	Anomie, Role Stress, Work Alienation
483 German, Austrian and Swiss middle and top executives	Gadinger, Fischer, Schneider, Fischer, Frank, & Kromm (2009)	Sleep Quality
	Gadinger, Fischer, Schneider, Terris, Krückeberg, Yamamoto, Frank, & Kromm (2010)	Subjective Health Perception
480 US nurse managers	Kath, Stichler, & Ehrhart (2012)	Job Satisfaction, Organizational Commitment, Turnover Intentions, Physical and Mental Health Symptoms
	Kath, Stichler, Erhart, & Sievers (2013)	Perceptions of Job Stress
750 male managers of a Finnish industrial company	Kivimäki, Kalimo, & Julkunen (1996)	Perceptions of Psychological and Physiological Strain
	Kivimäki, Kalimo, & Toppinen (1998)	Perceptions of Psychological and Physiological Strain
88 and 290 Dutch telecommunication managers out of a total sample of 338	Langelaan, Bakker, Schaufeli, van Rhenen, & van Doornen (2006)	Levels of Cortisol
	Langelaan, Bakker, Schaufeli, van Rhenen, & van Doornen (2007)	Allostatic load, BMI, Blood Pressure, Blood Levels
	Van Doornen, Houtveen, Langelaan, Bakker, van Rhenen, & Schaufeli (2009)	Cardiac Function, Respiratory Sinus Arrhythmia
572 Australian managers	Lindorff (1994)	Self-reported General Health
	Lindorff (1995)	Self-reported General Health

450 Chinese managers	Lu, Siu, & Cooper (2005)	Job satisfaction, Physical and Psychological Strain
	Lu, Siu, Au, & Leung (2009)	Job satisfaction, Physical and Psychological Strain
189 male middle-managers from a German automotive company	Siegrist & Peter (1996)	Biomedical Health Indicators
	Peter & Siegrist (1997)	Biomedical Health Indicators, Sickness Absenteeism
280 managers from Hong Kong	Siu, Luo, & Cooper (1999)	Job Satisfaction, Physical and Psychological Well-Being
	Siu, Spector, Cooper, & Donald (2001)	Job Satisfaction, Physical and Psychological Well-Being
	Siu, Spector, Cooper, Lu, & Yu (2002)	Job Satisfaction, Physical and Psychological Well-Being
5185 managers from 24 geo-political entities	Spector et al. (2001)	Job Satisfaction, Physical and Psychological Well-Being, Turnover Intention, Absenteeism
	Spector et al. (2002)	Job Satisfaction, Physical and Psychological Well-Being
199 food-service managers	Tabacchi, Krone, & Farber (1990)	Burnout
	Tabacchi, Krone, & Farber (1991)	Burnout

To get a better idea of the convergence of the available evidence, and to add a quantitative dimension to our results, we calculated a standardized index of convergence (SIC) (Wielenga-Meijer, Taris, Kompier, & Wigboldus, 2010) for each predictor category. The SIC is calculated by deducting the number of studies with significant negative findings, from the number of studies with significant positive findings, and dividing this number by the total amount of studies available (including studies with null findings). Values range from -1 to 1, indicating perfect convergence on a negative or positive relationship respectively. A value of 0 indicates that findings are either very inconsistent or nil findings.

2.3.3.3 Data extraction and coding procedure

In order to facilitate the analysis of study contents, we developed an excel sheet for data extraction. While reading the full texts, we extracted information on the sample (male, female, number of participants), the out-

come and predictor variables, as well as moderators and mediators. Further, we documented the respective research question, design, analyses, findings, and those findings that were relevant for our research question (i.e. what are predictors of leaders' health?).

In order to cluster the predictor variables, we combined inductive and deductive reasoning. We started with an inductive method, creating broad predictor categories based on the specific outcomes (e.g. "personal / dispositional" for variables such as personality, physical disposition, coping behaviors). In a second step we compared well-established classifications of managerial stressors (C. L. Cooper et al., 1988; Williams & Cooper, 1998) with our classification, and integrated them. This way, we enriched established classification systems by adding and updating dimensions that have been found to be particularly relevant in recent research, and reviewed their evidence.

2.3.4 Results

2.3.4.1 Quality assessment of articles

We assessed the (methodological) quality of all articles included in this review in terms of how well design, measurements, and statistical analysis allow causal inferences. Please refer to Table 1 for more detailed information on the rating procedure. Overall, 144 (78 %) articles included in this review, applied a cross-sectional research design, 26 (14 %) articles applied a longitudinal research design not measuring the central research variables on all occasions, and 14 (8 %) studies applied a more complex design allowing for stronger causal inferences (e.g. experiments, complete panel, interventions, diary studies), 132 (72 %) articles relied on a single source of information (i.e. self-report), whereas 50 (27 %) articles included two, and just two (1 %) articles included more than two sources of data. The majority of data (138 studies; 75 %) was analyzed using multivariate statistical procedures (e.g. regression analysis, SEM, MLM), while the rest (46 studies; 25 %) applied bivariate analyses (e.g. correlations, ANOVA).

2.3.4.2 Predictors of leaders' health

We applied the model on managerial stress development that has been introduced by C. L. Cooper, Sloan, and Williams (1988) to organize the results of this review. This model distinguishes between six different sources of pressure: factors intrinsic to the job, the managerial role, interpersonal relationships, career and achievement, organizational structure and climate, and the home / work interface (C. L. Cooper et al., 1988). Further, individual characteristics and coping strategies are considered to have an impact on the individual (i.e. mental health, physical health, job satisfaction) as well as the organization (i.e. morale, performance, turnover, absenteeism, efficiency). A set of scales, the occupational stress indicator (OSI) measures all dimensions described above. The OSI has been used in various studies and validated in multiple countries (e.g. Evers, Frese, & Cooper, 2000; Steiler & Paty, 2009; Swan, De Moraes, & Cooper, 1993; Williams & Cooper, 1998).

This theoretical frame offers a solid basis for our review, as it has been developed particularly for a managerial population, and thus considers several leader-specific demands. Further, the predictor categories that we devised independently after reviewing the available evidence, had great overlap with the predictor categories described by C. L. Cooper and colleagues. While other models with just three or four predictor categories such as role, task, physical, and interpersonal demands (Quick & Quick, 1984; Quick, Wright, Adkins, Nelson, & Quick, 2013) may appeal through their simplicity, a more detailed, and more importantly, leader-specific model fit our purposes best. Considering the number and breadth of predictors that are present in the literature, we aimed at presenting differentiated results and a holistic overview of predictors of leaders' health.

Moreover, the frequent use of the OSI makes it important to provide a systematic overview of the relative predictive validity of the different model dimensions, and to identify potential additions to the model. Even though the OSI categories had significant overlap with our own, we did adjust the overall model in certain respects. The OSI describes job satisfaction as an outcome variable and an indicator of well-being. While satisfaction could

be argued to be part of leaders' mental health, we excluded this attitudinal variable from our review as an outcome. First, it would have exceeded the scope of our article to add the vast literature on (leaders') job satisfaction. And second, we did not subsume job satisfaction as a work-related attitude under our definition of health. It did turn out however, that several studies have examined job satisfaction as *predictor* of leaders' health. This was thus included as a predictor category.

Another addition we made, concerns the category interpersonal relationships. Here, we found, that also leadership style and characteristics of followers can be predictors of leaders' health, which were not part of the original model. An overview of the revised model can be found in Figure 5. All predictor categories, as well as the specific predictors included in this review are displayed in Table 8. We continue by presenting the available evidence for each predictor category and the impact those specific factors have on leaders' health.

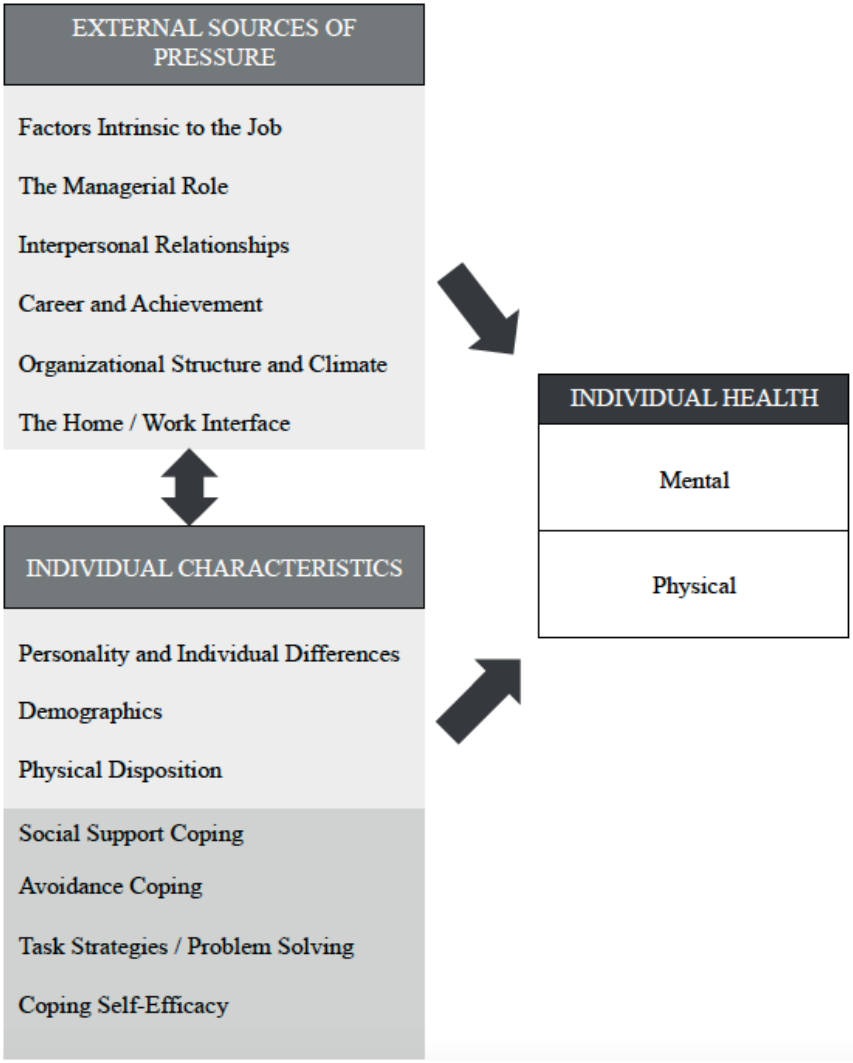

Figure 5. A model of leaders' health. Adapted from Cooper et al. 1988

Table 8. Overview of Predictors of Leaders' Health.

Predictor Category	Specific Predictors Contained in this Review
Factors intrinsic to the job	Overall / latent measures of job demands, workload, accountability, demands-control, monotony, dynamic tasks, monetary rewards, effort-reward balance
The managerial role	Hard managerial role (OSI), managerial level, functional area, management of subordinates, span of control, leadership challenges, implementation of changes and layoffs, structural and psychological empowerment, process-control, decision latitude, role ambiguity, role conflict, role overload
Interpersonal Relationships	Interactions with others, communication, high quality relationships, leader-member-exchange, interpersonal conflicts, social support, support and leadership from supervisors, own leadership style and behavior, follower competence, follower health, follower personality
Career and Achievement	Development opportunities, obstacles to career advancement, threat of job loss, performance pressure
Organizational Structure and Climate	Organizational structure, organizational size, sector, organizational change, organizational climate, Organizational culture
Home / Work Interface	Work family conflict, family work conflict, family supportive policies, stressful life events, non-work hassles, physical activity, lifestyle
Individual Characteristics	Type A behavior pattern, self-evaluations, self-concept, locus of control, extraversion, neuroticism, need for power, hardiness, emotional intelligence, trait optimism, workaholism, agency, communion, avoidance coping, social-support coping, problem-solving coping, self-assessed coping abilities, mindfulness, religiosity, gender, age, tenure, body weight, skinfold thickness, pre-hypertension, hypertension, health problems, energy level
Job Satisfaction	A positive attitude and contentment with ones' job

Stress	The perception of certain work demands as stressful, i.e. being unable to cope with the demands of the situation
Interventions	Web-based nutrition-oriented training, progressive muscle relaxation with biofeedback, yoga, spiritual aspects of leadership and leadership values, mindfulness, stress management, coaching, management skills, healing touch training for nurse managers (i.e. professional skill), leadership behaviors

2.3.4.3 Factors intrinsic to the job

When looking at health promoting or health hampering factors at work, one cannot ignore characteristics of the job. These include all types of variables that are related to the organization of leaders' work, without being per se unique to their job content or role (e.g. workload, compensation, control). A framework that is frequently applied in this context is job demands-resources theory (Bakker & Demerouti, 2014), which relates the balance between job demands (e.g. workload), and job resources (e.g. social support) to employees' psychological well-being, (i.e. work engagement and emotional exhaustion). According to job demands-resources (JD-R) theory, demands are the primary drivers of the health impairment-, and resources the primary drivers of the motivational process. However, demands and resources also interact and mutually influence their relationships to emotional exhaustion and work engagement. Most of the job characteristics we present in the following section can be categorized as job demands, because they represent a challenging or stressful aspect of work. Only few characteristics, i.e. decision latitude and rewards fall in the resource category. This emphasizes the general development in the occupational health literature to focus more strongly on negative aspects, rather than examining motivational or health promoting drivers (Jayawickreme et al., 2012). We begin by describing results related to overall measures of job-related stressors, i.e. demands, before examining more specific work-related predictors of leaders' health.

General measurement of job-related stressors

Not all studies clearly distinguish between different types of job-related stressors, but rather calculate an overall measure, or apply latent constructs with different underlying factors. For example, results from studies applying the OSI sub dimension factors intrinsic to the job (C. L. Cooper et al., 1988) refer to a combination of job-related stressors such as workload, monotony, and lack of control. There is some evidence for the expected negative relationship between factors intrinsic to the job and mental well-being (L. Lu, Kao, Cooper, & Spector, 2000; Shanfa, Sparks, & Cooper, 1998). This is further supported by a study linking leaders' job related hassles to their psychological wellbeing (J. H. Cohen, 1990). A longitudinal study examining the latent factors of job demands (work overload, emotional demands, work-home interference) and resources (social support, autonomy, development opportunities, feedback), found that changes in demands and resources influence leaders' work engagement and burnout (Schaufeli, Bakker, & Van Rhenen, 2009) over time. More specifically, leaders' burnout was predicted by an increase in demands and a decrease in resources. Work engagement was predicted by an increase in resources only. In both cases, burnout and work engagement at time one were controlled for. The positive impact of general job resources was confirmed by other research (Bakker & Xanthopoulou, 2013), as was the relation between job demands and emotional exhaustion, and reduced personal accomplishment (Kuruüzüm, Anafarta, & Irmak, 2008). Looking at the experience of job stress in leaders, Lindholm (2006) found, that overall job demands predicted higher levels of stress, whereas resources did not mitigate this relationship.

Contrary to the evidence presented thus far, one study did not find a relationship between overall job stressors (factors intrinsic to the job) and leaders' mental health (C. Lu, Siu, Au, & Leung, 2009). This could be due to the fact, that the authors entered several more specific stressors in the same regression equation, which turned out to be more important in predicting leaders' mental strain. Particularly, the organizational structure and climate, as well as the work home interface were significant in this regard. These results will be discussed later on.

In terms of physiological health, factors intrinsic to the job do not seem to play a major role. While a general measure of all OSI dimension predicted self-reported physical symptoms, the specific effects of job-related factors were not tested (C. Lu, Siu, & Cooper, 2005; L. Lu et al., 2000). Studies which did look at this specific relationship, did not confirm the expected link to physical health (C. Lu et al., 2009; Shanfa et al., 1998). Overall, the available evidence thus indicates that general or latent measures of work-related stress are negatively related to leaders' mental well-being (SIC = -0.88, k = 8[2]), however are unrelated to leaders' physiological symptoms (SIC = 0, k = 2). We now turn to a more detailed examination of specific work-related stressors.

Workload

The common conception that particularly leaders are subjected to high workload and experience adverse (health) consequences as a result has been tested in several studies. Qualitative and quantitative workload has been positively related to leaders' anxiety (Richardson & Tang, 1986) and mental ill-health (Jacobshagen, Amstad, Semmer, & Kuster, 2005; McCormick, 1988). Further, work overload has been related to perceived stress (Arora, 2013; Cubitt & Burt, 2002; Fiksenbaum, Jeng, Koyuncu, & Burke, 2010), emotional exhaustion (Fiksenbaum et al., 2010; Van Bogaert et al., 2014), depersonalization (Cubitt & Burt, 2002), and work-family conflict (Fiksenbaum et al., 2010; Jacobshagen et al., 2005; Spector, Cooper, Poelmans, Allen, O'Driscoll, Sanchez, Oi Ling Siu, et al., 2004).

Even though this evidence points into a clear direction, i.e. a negative relationship between workload and mental health, some more mixed findings are available as well. In one study, time pressure for example was unrelated to work engagement (Van Bogaert et al., 2014). Moreover, in another instance, a measure of workload has been related to positive mental health. Namely, work intensity has been identified as a positive predictor of work engagement (Fiksenbaum et al., 2010). One should take caution in interpret-

2 k = Number of effects used to calculate the SIC

ing the causality of this finding (i.e. an engaged individual likely spends more time at work), as it is based on cross-sectional research. Some more heterogeneous findings in terms of workload and mental well-being concern possible cultural differences. Spector and colleagues (2004) found a positive effect of work hours on mental well-being in an Anglo-American sample, and a negative effect of work hours on mental and physical well-being in a Chinese sample. These relationships were non-significant in a Latin sample.

Qualitative and quantitative workload (Richardson & Tang, 1986), as well as work intensity have been positively related to leaders' self-reported psychosomatic symptoms (Fiksenbaum et al., 2010) and externally assessed physical health risk (Robinson & Inkson, 1994). Further, psychic workload, defined as the perception of job characteristics combined with the ability to cope with them, was found to be related to female leaders' cardiovascular response at work and at home (Makowiec-Dabrowska & Bortkiewicz, 1989). These findings were confirmed in a male sample (Makowiec-Dabrowska & Bortkiewicz, 1990). Interestingly, there appeared to be some gender differences. In general, male leaders had a higher heart rate at work than female leaders. Further, male leaders' heart rate was affected more by their perceptions of workload, whereas female leaders' heart rate was affected more by their perception of coping abilities.

Looking at the findings presented above, the evidence across several studies indicates a negative relationship between workload and leaders' mental (SIC = -0.65, k = 17), as well as physical well-being (SIC = -0.75, k = 8). When examining workload, one should consider differences between qualitative and quantitative workload however, as working intensely could potentially have positive effects on mental health, e.g. the experience of *flow*. It is likely however, that this relationship is curvilinear, and will reverse as soon as individuals feel overwhelmed by their tasks.

Accountability

Even though accountability should be an important factor contributing to leaders' job stress and thus their health, little research has been done to confirm this relationship. One study (Richardson & Tang, 1986) related lead-

ers' accountability to their anxiety levels and self-reported psychosomatic symptoms. While those findings are theoretically and intuitively appealing, the lack of research in this particular case does not allow further inferences.

Demands and decision latitude

A relatively large amount of studies examined the job strain model (Karasek, 1979) in leaders, thus focusing on the amount of control leaders have in relation to the demands they are faced with. While social support is theorized to alleviate the pressure stemming from an imbalance in demands and control, findings related to social support will be presented in the section Interpersonal Relationships.

Several studies confirm the expected relationship between high demands, low control and reduced mental well-being (Berntson, Wallin, & Härenstam, 2012; Noblet, Rodwell, & McWilliams, 2001; C. A. Wong & Spence Laschinger, 2015). Further, job demands are positively related to leaders' emotional exhaustion (Dolan & Renaud, 1992; O'Neill & Xiao, 2010), burnout (Lundqvist, Reineholm, Gustavsson, & Ekberg, 2013), and self-reported mental health problems (Midje, Nafstad, Syse, & Torp, 2014; Spector, Cooper, & Aguilar-Vafaie, 2002).

The amount of leaders' decision latitude seems to have a buffering effect in the sense that it is positively related to leaders' mental well-being. Leaders' autonomy has been found to buffer negative effects of perceived stress on mental well-being (Kath, Stichler, & Ehrhart, 2012; Kath, Stichler, Ehrhart, & Schultze, 2013), and has been negatively related to emotional exhaustion (R. T. Lee & Ashforth, 1993b). A sense of control has been found to mediate the relationship between managerial level and levels of cortisol and anxiety (Sherman et al., 2012). Further, work control has been negatively related to leaders' presenteeism, but not their absenteeism (Gosselin, Lemyre, & Corneil, 2013), and control over the own work schedule has been positively related to enthusiasm (Lucia-Casademunt, Ariza-Montes, & Morales-Gutiérrez, 2013). Studies examining a lack of control or autonomy confirm the results described above. For example, external and organizational constraints have been identified as predictors for leaders' job stress (Kath, Stichler, Ehrhart, &

Schultze, 2013; Lam, 1988). The lack of control has been related to negative mental and self-reported physiological well-being (Kivimäki, Kalimo, & Toppinen, 1998).

Despite this evidence, several studies, including longitudinal evidence (R. T. Lee & Ashforth, 1993b), did not find a relationship between leaders' amount of control or autonomy and their mental well-being (Love & Edwards, 2005; Lundqvist et al., 2013; Lysonski, Nilakant, & Wilemon, 1989; Skagert, Dellve, & Ahlborg, 2012).

Studies examining the job strain model in relation to physiological health also provide useful insights. For example, the combination of high demands, low control, and low social support has been negatively related to leaders' sleep quality (Gadinger et al., 2009). The authors found that this type of work environment, and especially the lack of social support, affects female leaders' sleep quality more than males' sleep. Similar results were found when looking at psycho-somatic complaints (Gadinger et al., 2010), and the ratio of cortisol and dehydroepiandrosterone sulfate, an indicator of psychophysical well-being (Gadinger, Loerbroks, Schneider, Thayer, & Fischer, 2011). In the latter case, effects were tested differently for managerial and non-managerial employees. The association of moderate levels of control and psychophysical well-being was only confirmed for managerial employees. This indicates, that a lack of job control might be a particularly relevant job-related stressor for managerial employees, i.e. leaders.

Next to job control, general perceptions of environmental control, e.g. control over ones' life, have been positively related to leaders' self-reported health status (Lindorff, 1995). There is few evidence opposing these findings. A study testing associations between job demands, control, support, extra-occupational activities and cardiovascular risk (Bugajska et al., 2011), could not confirm the impact of job demands on physical health. Further, job constraints were related to self-reported health in a US but not an Iranian sample (Spector, Cooper, & Aguilar-Vafaie, 2002).

Looking at the evidence relating the job strain model to leaders' mental and physical health, a majority of studies tie the unfavorable combination of

high demands paired with limited decision latitude to reduced mental (SIC = -1, k = 8) and physical (SIC = -0.75, k = 4) health in leaders. Further, decision latitude or autonomy has been positively related to leaders' mental (SIC = 0.64, k = 14) and physical (SIC = 0.75, k = 4) health in most studies. This can also be related to JD-R theory, which was built on the job strain model (Bakker & Demerouti, 2014), and indicates its applicability for leaders. More specifically, the assumption that high demands are related to emotional strain, i.e. emotional exhaustion, and resources such as decision latitude are related to mental well-being, i.e. work engagement, is reflected here.

Monotony

Reviewing the available evidence, not much research has been done on the health-hampering effects of monotony in a leadership context. This lack of empirical work could be related to the nature of leaders' job, which is characterized by a high level of fragmentation as well as broad responsibilities, making it thus unlikely for monotony to occur.

One study that did look at the effects of monotony on leaders' health found a positive relationship between monotony and male leaders' heart rate (Bortkiewicz, Palczynski, Makowiec-Dabrowska, & Górski, 1998). This relationship was not found for female leaders. Further, repetitive work has been related to depressive symptoms in male, but not female leaders (Cohidon, Santin, Imbernon, & Goldberg, 2010). Not examining monotony, but the counterpart, namely dynamic tasks, Mohr and Wolfram (2010) found that high levels of task dynamic predicted leaders' irritation. This relationship was particularly pronounced when tasks were unpredictable.

While there is not enough evidence to draw a holistic conclusion, it seems interesting to point out that there may be gender differences in how leaders' perceive or react to monotonous tasks. Further, while the relationship between monotony and leaders' health tends to be negative, i.e. high monotony has been negatively related to leaders' mental (SIC = -0.50, k = 2) and physical (SIC = -0.50, k = 2) well-being, it could also be curvilinear in that high fragmentation leads to burn- and monotony to bore-out. One should

be careful in interpreting these findings, as they are based on a very limited number of studies.

Rewards and benefits

One job-related factor, often applied by organizations to attract and attain leadership talent, are rewards and benefits. While (monetary) rewards and benefits are not directly linked to the content or organization of leaders' jobs they are supposed to enhance motivation, commitment, and performance. However, if rewards are not applied carefully and are perceived as inappropriate (e.g. effort-reward imbalance), then monetary incentives can exert a health hampering influence.

Not many studies examined direct relationships between organizational rewards and leaders' health. One study found a negative relationship between perceptions of high wages and leaders' burnout (Somech & Miassy-Maljak, 2003). Examined in a structural equation model, these perceptions, along with others such as status-perceptions and interpersonal work demands, were influenced by a perceived meaning of work. In the overall model however, only interpersonal demands and workload predicted leaders' burnout.

Further, there is some evidence connecting organizational rewards with absenteeism. Low organizational rewards (Peter & Siegrist, 1997) have been positively, and bonus payments have been negatively related to leaders' absenteeism (Pfeifer, 2014). While we do regard absenteeism as a negative health indicator, one should be careful not to simplify these results. Leaders' high levels of absenteeism under conditions of low incentives could simply be an expression of counterproductive work behavior resulting from dissatisfaction.

More important than the reward structure in itself, is the effort-reward balance. Specifically, leaders' who perceive that the effort invested in their job is not properly related to the rewards they receive for it, suffer from impaired mental and physical well-being. Effort reward imbalance has been related to increased stress-reactivity (Limm et al., 2010), emotional exhaus-

tion (Spence Laschinger & Finegan, 2008), depressive symptoms (Kuhnke-Wagner, Heidenreich, & Brauchle, 2011; Nourry, N., Luc, A., Lefebvre, F., Sultan-Taïeb, H., & Béjean, 2014), cardiovascular disease risk for male leaders (Siegrist & Peter, 1996), and hypertension (Gamage & Seneviratne, 2016; Peter & Siegrist, 1997).

Even though the number of studies examining organizational rewards in relation to leaders' health is small, the results suggest beneficial effects of organizational rewards on leaders' mental health (SIC = 1, k = 3). Thus far, there is no evidence connecting monetary rewards with physiological health indicators in leaders. Further, the available evidence indicates that effort reward imbalance is likely detrimental to leaders' mental (SIC = -1, k = 4) and physical health (SIC = -1, k = 3).

2.3.4.4 The managerial role

Having discussed general job-related predictors of leaders' health, we now turn to predictors that are linked to the leadership role itself. Here, several aspects have been researched including the leaders' managerial level, leadership-specific tasks (e.g. implementation of layoffs), power and control constraints, as well as role aspects (e.g. role conflict). Overall assessments of the challenges of the managerial role using the OSI have yielded mixed results with regard to leaders' health.

According to the OSI, the managerial role is perceived as hard, when leaders experience pressure due to others' expectations (e.g. constant availability) or have to fulfill negative tasks (e.g. implementing redundancies) (C. L. Cooper et al., 1988). While managerial role factors have predicted mental well-being and self-reported physical well-being in a Taiwanese leader sample, these relationships were not found in a sample from Hong Kong and the UK (L. Lu et al., 2000; Siu, Lu, & Cooper, 1999). However, perceptions of a hard managerial role have been positively related to leaders' s-lipoprotein, an indicator of negative neuroendocrinological functioning (Bernin, Theorell, & Sandberg, 2001). Considering the different effects in different samples, we conclude that perceptions of a hard managerial role can have adverse

consequences for mental (SIC = -0.33, k = 3) and physical (SIC = -0.5, k = 4) health.

Managerial level

Several studies examined whether employees with (higher) leadership roles have different health outcomes than employees without leadership positions. The findings are very mixed and imply that having a leadership role does not per se pose a risk to ones' health.

Leaders do report higher levels of stress stemming from different sources (e.g. effort-reward imbalance, organizational design and climate) than non-leaders (Arora, 2013; Gamage & Seneviratne, 2016; Shanfa et al., 1998). Further, one study has related leaders' managerial level negatively to their overall mental health (Widerszal-Bazyl, Cooper, Sparks, & Spector, 2000). However, in another study leaders reported less burnout than their followers (Lundqvist et al., 2013), and managerial level has been positively related to work engagement (Fiksenbaum et al., 2010). Further, different studies have related managerial level to reduced emotional exhaustion (Fiksenbaum et al., 2010) or mental health (Richardsen, Burke, & Mikkelsen, 1999). These positive findings can likely be explained by the fact, that even though leaders are faced with higher demands, they also have more resources (e.g. meaning of work, task variety) at their disposal (Lundqvist et al., 2013).

Looking at physiological evidence, managerial work has been linked to negative health outcomes such as elevated blood pressure, heart-rate, and the excretion of the stress hormone epinephrine (Frankenhaeuser et al., 1989). A study comparing active and retired managers, has linked active managers' work to increased blood pressure and masked hypertension, even when age, body-mass-index (BMI), sleep and lifestyle habits were controlled for (Yamasue, Hayashi, Ohshige, Tochikubo, & Souma, 2008). It was shown that leaders' levels of cortisol are higher on work days than on days off-duty (Langelaan, Bakker, Schaufeli, van Rhenen, & van Doornen, 2006). Further, leaders have been rated at higher risk for cardiovascular disease than non-leaders (Bugajska et al., 2011). To qualify these findings, it is important

to note, that the latter study did not control for age, and leaders were significantly older than non-leaders.

Not all studies found negative health outcomes. On the contrary, the leadership level has been negatively related to levels of cortisol and anxiety (Sherman et al., 2012), where a sense of control has been identified as underlying mechanism. Other research could not confirm the relationship of managerial level and cardiovascular risk (Berg & Hostmark, 1994), or self-reported physiological health symptoms (Widerszal-Bazyl et al., 2000).

Looking at these findings, it is not possible to derive at a clear conclusion as to whether the leadership role in itself poses a health risk. Overall, the direction of the relationship between managerial level and mental (SIC = -0.25, k = 8) and physiological health (SIC = -0.43, k = 7) seems to be negative, however, this oversimplifies reality. It is necessary to take a closer look at which factors are related to the managerial level and examine their health-promoting or health-hampering consequences. For example, the occupational level (i.e. being an executive) has been linked to role overload (Jha, 1988), and findings indicating that leadership level could be a predictor for depressive symptoms disappeared, after controlling for other predictor variables (e.g. social, demographic, and health-related factors) (Cohidon et al., 2010). We continue by examining predictors that are related to managerial level but give a more specific indication as to what it is that drives leaders' health.

Managerial tasks

Becoming more specific than just distinguishing between leaders and non-leaders, some studies have examined, how leaders' tasks impact their health. Looking at leaders' functional area (e.g. production, maintenance, finance, personnel, sales), Menon and Akhilesh (1994) found, that the nature of managerial stress differs between the different functions. For example, sales managers experienced more stress stemming from job-related travel than finance managers. While this study does not allow a clear inference as to which managerial tasks are related to mental health, it nevertheless

demonstrates that a closer look at what leaders do is crucial to identify health predictors.

A key task for leaders is the responsibility for and management of others (i.e. subordinates), which has been related to perceived work stress (Shahzad, Azhar, & Ahmed, 2013), presenteeism, and absenteeism (Gosselin et al., 2013). Not only the responsibility for others, but also the *number* of people, leaders are responsible for, has been related to their well-being. Surprisingly however, a large number of staff is not necessarily associated with impaired health. For example, leaders' emotional exhaustion has been negatively related to their span of control (Tabacchi, Krone, & Farber, 1990b). Another study however has associated leaders' span of control with an increase in illegitimate tasks, which in turn were related to increased stress levels (Björk, Bejerot, Jacobshagen, & Härenstam, 2013). Next to the people-related aspect of leaders' job, it has been shown that overall leadership challenges, such as creating change and dealing with responsibility, are positively related to leaders' work engagement but also their emotional exhaustion (Courtright, Colbert, & Choi, 2014).

Looking at physiological health, the available evidence indicates that some specific tasks may pose a health risk. For example, one study showed and impact of leadership-specific tasks, such as being a spokesperson, on leaders' heart-rate (B. S. Cooper, Sieverding, & Muth, 1988). Another task-specific stressor that potentially causes negative health, are negative responsibilities such as the implementation of layoffs. Leaders' self-reported physical health has been negatively affected by the responsibility of letting people go via emotional exhaustion and job insecurity (Grunberg et al., 2006).

Comparing the unique contribution of work and non-work events, the non-work domain appears to be more important to predict leaders' physical health risk (Robinson & Inkson, 1994), whereas leaders' mental health is impacted more strongly by work-related events (Lindorff, 1994). Both studies showed however, that both work as well as non-work events impact leaders' mental and physical health.

Overall the diverse and often challenging tasks leaders are faced with, have been differently related to their mental health (SIC = -0.43, k = 7). Even though we report a SIC here, it is difficult to compare the results of the studies, as they examined different tasks. Further it may be speculated whether the challenges leaders are faced with pose a double-edged sword in terms of mental health. On the one hand difficulties with staff or the initiation of change may be perceived as a positive challenge, which enhances work engagement, while these difficulties exhaust leaders' mental resources at the same time. The differentiation between challenge and hindrance stressors is important in this context, as different stress-perceptions are differentially related to (health) outcomes (Cavanaugh, Boswell, Roehling, & Boudreau, 2000). Looking at physiological evidence, even though sparse, the results suggest a negative relationship between leaders' tasks and their physiological health (SIC = -1, k = 3).

Power constraints

One aspect that is characteristic for employees in leadership positions is the amount of power they hold. Power or control needs to be clearly differentiated from autonomy, which has been described in the previous section (see demands and decision latitude). Power refers to the amount of control leaders have over people, processes, and resources, as opposed to control over their own work (autonomy). The managerial level plays an important role in this regard, as power usually increases with managerial level. Several studies have examined relationships between leaders' power and their mental health, particularly looking at lower and middle management positions, which have more power than their subordinates, but are still subjected to control from superiors.

The importance of the managerial position in relation to managerial power and strain became apparent in a study comparing first line and middle managers. While a lack of structural and psychological empowerment has been positively related to first line managers' emotional exhaustion (and, in turn, health outcomes such as energy levels, physical and depressive symptoms), middle managers' exhaustion was only related to a lack of structural

empowerment, i.e. limited access to key resources such as information and support (Spence Laschinger, Almost, Purdy, & Kim, 2004).

Control over processes has been related to leaders' mental well-being. Bottger and Hirst (1988) showed that the extent to which leaders are involved in the budget setting process and can influence budget goals, is negatively related to stress, and particularly alleviates stress stemming from a high budget emphasis. Further, control over the hiring process has been related to lower stress levels in leaders (Crank, Regoli, Hewitt, & Culbertson, 1993), and female leaders' lack of control over the work process has been related to depressive symptoms (Cohidon et al., 2010). Leaders' overall decision latitude (i.e. the fact whether they fulfill a "de facto" leadership role as opposed to having a leadership title without any authority) was unrelated to mental energy (von Vultée, Axelsson, & Arnetz, 2007), but has been negatively related to emotional exhaustion (Van Bogaert et al., 2014; von Vultée et al., 2007). In another study, female leaders' decision latitude was positively related to their contentment as well as their enthusiasm as indicators of positive mental well-being (Lucia-Casademunt et al., 2013).

The evidence presented here suggests that a constraint in power is negatively related to leaders' mental health (SIC = -0.75, k = 8). While physiological health outcomes have not been examined much in relation to leaders' power, one of the studies discussed above, found that leaders' emotional exhaustion mediated the relationship between lack of empowerment and self-reported physiological health symptoms (Spence Laschinger et al., 2004).

Role issues

Factors such as ambiguity as to which role an employee has to fulfill, or conflicting demands between different roles, have been related to negative health outcomes (Schmidt, Roesler, Kusserow, & Rau, 2014). For leaders, these role issues should be particularly pronounced, as the task of being a leader requires the fulfillment of different roles (e.g. mentor, spokesperson, inspirational leader, manager). This is reflected by a myriad of studies, which have examined the impact of leaders' role issues on their health.

With regard to mental health, different role issues have been examined. We describe results relating to role ambiguity, role conflict, and role overload. While role ambiguity develops if a role and the associated tasks and responsibilities are not clearly defined, role conflict results from oftentimes-contradictory demands of different roles. Role overload exists when a person is faced with a high number of different roles (Katz & Kahn, 1966).

Role ambiguity has been positively related to leaders' psychic symptoms (Kivimäki et al., 1998), depressive symptoms (Scalzi, 1990), job tension (Lysonski et al., 1989), stress (Kath et al., 2012; Kath, Stichler, Ehrhart, & Sievers, 2013; Shahzad et al., 2013), and burnout (R. T. Lee & Ashforth, 1993a). Role conflict has been related to leaders' emotional exhaustion (Van Bogaert et al., 2014), and burnout (R. T. Lee & Ashforth, 1993a). Role overload has been related to enhanced perceptions of stress (Kath et al., 2012; Kath, Stichler, Ehrhart, & Sievers, 2013). More general measures of role stress, assessing a combination of the abovementioned role-related factors have been related to environmental frustration, anger reactions and job anxiety (Singh & Singh, 1992).

Less evidence exists linking role issues to leaders' physiological health. Role ambiguity (Kivimäki et al., 1998) and an overall measure of role stress (Lam, 1988) have been related to increased self-reported physiological symptoms, but none of the role stressors were related to leaders' fatigue (Jha, 1988). To our knowledge, no evidence in terms of role stressors and bio-physiological markers (e.g. blood pressure, heart rate) exist.

Overall, with nine studies examining leaders' role issues and mental health, and an SIC of -1 ($k = 9$), the evidence supporting a negative relationship between leaders' role issues and their mental health is strong. Further, role issues seem to be negatively related to self-reports of physiological health ($SIC = -0.67$, $k = 3$), however compared to the mental health outcomes, the evidence is scarce and does not include bio-physiological measurements.

Interpersonal relationships

A central characteristic of the leadership role is the high degree of interpersonal interaction that leaders are confronted with, e.g. when attending and moderating meetings, distributing tasks, and dealing with employee issues. While high quality relationships with subordinates, peers, and superiors can provide social capital, these interactions also offer the potential for conflict and require a substantial amount of emotional labor (Humphrey et al., 2008), which might have an adverse impact on leaders' health. In the following paragraph we look at this multifaceted influence of interpersonal relationships on leaders' health.

Interactions and relationships

First, we look at how leaders' interactions as well as the quality of their relationships with others impact their well-being. Some studies have examined how leaders' interactions with others, regardless of the nature of the relationship with their interlocutors, or the content of the respective interaction, affect leaders' health. This research is driven by the assumption that interactions can be stressful and resource-consuming and thus lead to adverse health-outcomes.

In terms of mental health this assumption receives limited support. On the one hand, leaders with direct reports, have reported enhanced levels of role conflict, and difficulties in decision making, compared to employees who occupied a strictly content-related leadership role (e.g. data managers) without having reports (Savery & Hall, 1986). This indicates that having subordinates adds to leaders' stress. Similarly leaders' reports of interpersonal demands stemming from interactions with subordinates and external parties, have been positively related to leaders' burnout (Somech & Miassy-Maljak, 2003), and leaders' interdependency with third parties has been shown to increase their role-related stress (S.-S. Wong, DeSanctis, & Staudenmayer, 2007).

On the other hand, leaders' interpersonal relationships at work can constitute a resource and foster positive mental health. Communication

and contact with others have been positively related to female leaders' contentment and enthusiasm at work (Lucia-Casademunt et al., 2013). And high quality interpersonal relationships (e.g. shared goals, mutual respect, communication) with superiors and followers, but not with peers, have been positively related to leaders' work engagement (Warshawsky, Havens, & Knafl, 2012). Further, leaders' positive affect, as well as their job stress, have been shown to be affected by the quality of their relationships with followers. For example high leader-member exchange (LMX), as well as a low variance in LMX ratings (LMX differentiation) from followers has been positively related to leaders' positive affect and negatively to their stress. In the same study, high average LMX ratings buffered stress-effects stemming from LMX differentiation (Bernerth & Hirschfeld, 2016). Further, leadership positions can be accompanied by feelings of isolation, and it has been shown, that leaders' feelings of loneliness (i.e. professional isolation) were related to their perceived stress levels, emotional exhaustion, and depersonalization (Cubitt & Burt, 2002). The quality of relationships with others in and outside of work has been positively related to leaders' mental health in a UK but not a Taiwanese sample (L. Lu et al., 2000).

In terms of physiological health, the same study found a positive relationship for UK but not for Taiwanese leaders. Further, interpersonal interaction has been related to an increase in coronary risk factors such as serum triglyceride levels and serum uric acid levels (Howard, Cunningham, & Rechnitzer, 1986). This relationship has been moderated by personality. Only leaders with type-A behavior pattern (TABP) experienced these adverse effects. Finally, an interesting study found no relationship between leaders' experience of generalized workplace abuse (i.e. being confronted with interpersonally hostile interactions at work such as disrespect, or intentional isolation) and their alcohol abuse. However, there has been some indication for an indirect relationship of workplace and alcohol abuse via escapist reasons for drinking in male leaders (Moore, Sikora, Grunberg, & Greenberg, 2007).

Overall, the evidence suggests a positive link (SIC = 0.67, k = 9) between positive interactions and leaders' mental health, indicating that other people can constitute a resource for leaders at work. The evidence in terms of phys-

iological health is inconclusive (SIC = 0, k = 4). One study indicates that leaders' interpersonal interactions cause a physiological stress response, while studies based on self-reported health have mixed findings.

Interpersonal conflicts

Conflicts, which are a form of negative interpersonal interaction, can be defined as "the process that begins when one party perceives that the other has negatively affected, or is about to negatively affect, something that he or she cares about" (Thomas, 1992, p.653). As leaders often have to make unpopular decisions and integrate the needs of conflicting groups (e.g. employees vs. top-management), it is likely that they are confronted with interpersonal conflict at work. The studies that have examined health-related consequences of conflicts indicate that this might be a point of concern, particularly with regard to leaders' mental health.

Interpersonal conflict has been negatively related to leaders' overall mental well-being (McCormick, 1988). And, even though role related factors have been stronger predictors of managerial stress, interpersonal conflict also has explained some variance in leaders' stress levels (Van Bogaert et al., 2014). Further, a perceived lack of cooperation has been related to depressive symptoms in male managers (Cohidon et al., 2010), and interpersonal and cohesion problems have been positively correlated with leaders' emotional exhaustion, depersonalization, and reduced personal accomplishment (Dolan & Renaud, 1992). Intragroup conflict has predicted leaders' presenteeism, but not absenteeism (Gosselin et al., 2013). Finally, one study divided leaders in different "stress" clusters according to the demands and resources they faced. Cluster membership in a cluster characterized mainly by problems with staff and upper management (i.e. conflict) has been positively related to reports of work-related stress (Berntson et al., 2012).

The available evidence points to a negative relationship between interpersonal conflict and leaders' mental health (SIC = -0.86, k = 7). We could not find any studies relating interpersonal conflict to physiological health symptoms in leaders. The lack of existing research on this topic may in part be due to the difficulty of measuring conflicts at work. Research designs best suited

to examine this link (e.g. event-based diary studies) require a large amount of time and cooperation from leaders' which is often unrealistic to obtain. Adding a bio-physiological marker would make the studies even more complex.

Social support

In this paragraph, we look at the effects of social support that leaders can receive from different sources such as peers, followers, superiors, or from outside of work. While one could subsume social support under high quality relationships, we decided to discuss results related to social support separately. The concept of social support (Vaux, 1988) is related to, but distinct from overall relationship quality. Further, quite a lot of studies have examined effects of social support on leaders' health, and it thus makes sense to examine them separately.

Social support has been looked at in various studies, the results however are quite mixed. Several studies found a positive relationship between different types of social support and leaders' mental health. Particularly, social support appears to buffer negative strain effects.

Social support from peers, supervisors and the organization has been shown to buffer negative effects of perceived job stress (Dolan & Renaud, 1992; Kath et al., 2012), and general social support has been negatively related to leaders' perceived job stress (Owen, 2006). Social support from followers, superiors, and family has been negatively related to all three burnout dimensions (Rahim, 1995; Tabacchi, Krone, & Farber, 1990a; Tabacchi et al., 1990b), and social support from superiors and the organization has been negatively related to psychological withdrawal, depersonalization, and reduced personal accomplishment via emotional exhaustion (R. T. Lee & Ashforth, 1993a). Further, social support has been indirectly related to reduced emotional exhaustion via role stress (R. T. Lee & Ashforth, 1993a, 1993b). Finally, leaders who received little support from their spouse have reported lower mental well-being (Sutherland & Davidson, 1989).

Next to these positive effects, some studies found more mixed findings, particularly when differentiating between different sources of support

as well as perceived and received support. A study looking at gender effects (Lindorff, 2000) found that perceived social support reduced strain in male and female leaders. In terms of received support however, gender effects became apparent. Surprisingly, received emotional support was related to an increase of strain in male leaders, whereas received emotional support was unrelated to female leaders' strain. In male leaders, perceived support and received tangible assistance interacted, so that the effect of low perceived support on strain was mitigated by received tangible support. Another study showed that leaders' perceived social support from superiors interacted with their stress levels to foster curiosity, which was applied as measure for psychological wellbeing. This did not apply for support from other sources (co-workers, family, and friends). The authors found several interaction effects in terms of personality, indicating that particularly hardiness determines how individuals react to social support. None of the social support variables predicted leaders' anxiety levels (Luszczynska & Cieslak, 2005). Social support from outside work was negatively correlated with leaders' overall mental well-being (Spector, Cooper, & Aguilar-Vafaie, 2002)

Finally, support from organizational members has been found to alleviate role stress in leaders who were confronted with a novel environment (i.e. an international transfer). Support from outside of work has not been related to any of the role stressors in this context (Black, 1990).

Several studies did not find any effects between different types of social support and leaders' mental health. Social support from peers (co-workers) has been unrelated to leaders' psychological well-being (J. H. Cohen, 1990), and burnout (Tabacchi et al., 1990a). Support from friends has been unrelated to burnout (Tabacchi et al., 1990a), and a composite measure of social support, including supervisor, peer, spouse and friend / relative support has been unrelated to leaders' levels of stress (Rahim, 1995). Work related social support has been unrelated to burnout and healthy work attendance (Skagert et al., 2012). Further, the mitigating role of social support in the relationship between stress and burnout (R. T. Lee & Ashforth, 1993b; Rahim, 1995), or work demands and stress (Lindholm, 2006) could not be confirmed by the respective authors.

Evidence relating social support and physiological health is partially contradictive, especially with regard to self-reported health measures. While one study found a positive relationship between work and non-work related social support and self- reported health status (Love & Edwards, 2005), another did not find any relationship with health status change (Lindorff, 1995). Further, social support from outside of work has been negatively correlated with self-reported physical well-being in a U.S. sample. However, the same study found a positive correlation between physical wellbeing and social support in an Iranian sample (Spector, Cooper, & Aguilar-Vafaie, 2002).

Looking at bio-physiological health indicators, in a study by Gadinger and colleagues (2009), work-related social support (from colleagues) has been related to better sleep quality – particularly in female leaders. The authors showed, that high job control and high social support buffer the sleep-impairing effects of high job demands. An additional interaction with gender demonstrated, that particularly female leaders' sleep is impaired when subjected to demanding jobs with low control and social support. These effects have been confirmed in another study, where social support was negatively related to psycho-somatic complaints. Again, males were less affected by a lack of social support than females. Further, females reported higher demands, lower control, and less support than their male colleagues (Gadinger et al., 2010). Further, social support from sources at work and home, as well as communication at work, has been positively correlated with male managers' neuroendocrinological functioning (Bernin et al., 2001), even when controlling for smoking habits and physical activity.

Overall, many studies examined the relationship between different types of social support and leaders' health. The results are very heterogeneous, but there seems to be a positive relationship between social support and leaders' mental (SIC = 0.44, k = 25) and physical health (SIC = 0.57, k =7). These differences in findings could be due to differences in the operationalization of social support (e.g. perceived vs. received support) and potential gender and culture effects. Female leaders' health for example seems to suffer more when confronted with a work environment that lacks support, and leaders from individualistic and competitive cultural backgrounds (i.e.

the U.S.) may perceive support as a form of weakness or failure and thus experience reduced mental and physical wellbeing. As most of these findings are based on cross-sectional research, the reversed explanation (e.g. leaders who appear unhealthy or stressed receive more support) is also plausible.

Supervisors' support and leadership behavior

One fact that is often overlooked in leadership research is that, more often than not, leaders are followers too. Particularly when they occupy mid-level management positions, they are subjected to and affected by their superiors' leadership style, behavior, and support. Few studies have examined relationships between leaders' health and their supervisors' behavior.

Two studies indicate that leaders can benefit from supervisor support. Supervisor support has moderated the relationship between leaders' task-related challenges (dynamic tasks) and their level of irritation (Mohr & Wolfram, 2010). Further, supervisor support has been negatively related to leaders' psychological strain and has moderated the relationship between work-family interference and psychological strain (O'Driscoll et al., 2003).

Next to supervisor support, some studies have looked at effects of supervisors' transformational leadership (Bass, 1985; Bass & Avolio, 1990) and leaders' health. Although transformational leadership practices by superiors have impacted some of leaders' job characteristics (e.g. control, rewards), leadership practices were unrelated to leaders' burnout (H. Lee & Cummings, 2008). It may be speculated however, whether the positive influence of transformational leadership practices has an indirect effect on leaders' health via their work characteristics. Further, transformational leadership has not been found to moderate the relationship between perceived job stress and strain outcomes such as mental and physical symptoms (Kath, Stichler, Ehrhart, & Schultze, 2013).

The evidence on superiors' leadership practices and leader (mental) health is very sparse and results are mixed (SIC = 0.5, k = 4), which provides an interesting avenue for future research. Particularly, as transformational leadership has been shown to be beneficial for employees, it would be in-

teresting to determine why these effects do not seem to apply to leaders. It seems that leaders can benefit from and are in need of more specific leadership support. It is unclear however, how this support could look like.

Leadership style and practices

Next to superiors' leadership practices, leaders' own leadership behaviors and style have been investigated in relation to their health. In general, it is expected that demonstrating certain leadership behaviors such as inspirational transformation might constitute a resource-consuming work demand that leads to adverse consequences over time.

Some findings confirm this notion in that they find negative relationships between various leadership behaviors and leaders' mental health, particularly different facets of job burnout. Specifically, consideration, supportive leadership, initiating structure, bureaucratic leadership, passive-avoidance, and laissez-faire leadership have been negatively related to leaders' mental well-being. Consideration behaviors have been positively related to leaders' emotional exhaustion, depersonalization (Dale & Weinberg, 1989), and burnout (Kelley, Eklund, & Ritter-Taylor, 1999). Initiating structure has also been positively related to burnout (Kelley et al., 1999). Bureaucratic leadership has been positively related to emotional exhaustion but was unrelated to personal accomplishment (Ryska, 2002). Passive-avoidance leadership has been positively related to emotional exhaustion and depersonalization (Zopiatis & Constanti, 2010), and laissez-faire leadership has been positively related to emotional exhaustion within and across time (Zwingmann, Wolf, & Richter, 2016). Further, executing a tight supervision style has been positively related to role stress (L.-T. Lu & Lee, 2008), and leaders' supportive style has been positively related to their perceptions of job stress (Ryska, 2002). Some conflicting findings have been made with regard to centralized decision-making practices, which have been positively related to role stress in a Japanese and negatively related to role stress in a Taiwanese sample (L.-T. Lu & Lee, 2008). Similarly, autocratic leadership, which is also characterized by leader-centric decision making has been negatively associated with depersonalization and personal accomplishment (Rad & Ghalenoei, 2013).

Some studies indicate that certain reports of leadership behavior are positively related to mental well-being. Specifically, collaborative, directive, transformational leadership, and authenticity have been positively related to leaders' mental health. A directive leadership style has been positively related to personal accomplishment and unrelated to emotional exhaustion (Ryska, 2002). Leaders rating themselves as transformational, have scored higher in personal accomplishment and lower in emotional exhaustion and depersonalization, than their less-transformational colleagues (Zopiatis & Constanti, 2010). Even though not specifically operationalized as leadership behavior, one study showed that leaders' authenticity at work was positively associated with their subjective well-being (Ménard & Brunet, 2011). This supports the notion, that behaviors that might not come natural to a leader (e.g. being inspiring in times of crisis), take a toll on leaders' health, whereas leaders who can behave according to their nature (e.g. be authentic) do not suffer from health impairment.

Taking a more differentiated look at relationships between leadership and health, both time as well as environmental factors could potentially explain why different relationships (i.e. negative and positive) have been found. Controlling for job demands and resources, leaders' transformational style has been negatively, and their laissez-faire styles has been positively related to their emotional exhaustion *within time*. *Longitudinally*, both, transformational and laissez-faire leadership have been positively related to leaders' emotional exhaustion (Zwingmann et al., 2016). These results indicate, that health-hampering effects of demonstrating positive leadership behaviors might only come into action across time. Further supporting this notion is a longitudinal study that demonstrated that leadership styles impact leaders' surface acting, deep acting, and display of genuine emotion (Arnold, Connelly, Walsh, & Martin Ginis, 2015), thus indicating that leadership is related to emotional labor. The same study found some indirect effects from leadership style (transformational, laissez-faire) to burnout via genuine emotion. More longitudinal studies are needed to confirm those results.

Evidence that effects of leadership style may be dependent on contextual factors stem from a study, which examined gender effects in a

male-dominated environment. The authors demonstrated that an interpersonally oriented leadership style was negatively related to female leaders' mental health in this particular environment, while males who used this leadership style reported higher mental health. It is important to note that no overall differences in mental health between males and females existed in this sample (Gardiner & Tiggemann, 1999). Further, some significant interactions were found between leadership style and organizational goals (e.g. financial goals, excellence goals), indicating that particular leadership behaviors are differently related to leaders' mental health under different environmental conditions (Ryska, 2002).

These findings indicate that, while leadership styles and leaders' health are related, we know little about the nature of this relationship. Overall, the evidence suggests a weak negative relationship between leadership styles and mental health (SIC = -0.21, k = 19). It is important to note in this case, that the low SIC does not stem from null results but rather from the report of conflicting relationships (positive vs. negative), which makes this topic a fascinating area for future research. It is puzzling that very different leadership styles are related to the same health outcomes, e.g. both passive avoidance leadership as well as consideration behaviors are positively related to leaders' emotional exhaustion. To our knowledge there is no empirical evidence that relates leadership with physical health.

Followers

Next to the types of relationships leaders have with their followers, as discussed at the beginning of this section, also the types of followers (i.e. followers' characteristics) can impact leaders' mental health. As it is leaders' main task to interact with and manage their followers, it seems logical that followers' characteristics impact their leaders. The few studies that have investigated this assumption are very heterogeneous.

In terms of follower characteristics, one study found, that leaders reported *inadequately trained subordinates* as a major source of stress (van der Ploeg, Vis, Cooper, & Spielberger, 1986). Further, followers' behavior can have an impact on those who lead them. For example, hard upward influence

tactics from followers have been positively related to leaders' interpersonal stress, whereas leaders have not been affected by followers' soft and rational influence tactics (Deluga, 1991).

Next to competence and influencing behavior, leaders' and followers' mutual perceptions can have an impact on leaders' mental health. One study found that the fit between leaders' actual personality and the leader personality preferred by their followers is related to leaders' burnout. Specifically, a fit in terms of orientation and thinking was positively related to burnout, whereas a fit in terms of sociability, decision-making, and optimism was negatively related to burnout. Other personality fit dimensions were unrelated to burnout (Peltokangas, 2014). Further, results of another study indicate that leaders, who perceive that their followers have lots of stress, feel highly pressured themselves. More specifically, leaders' perceptions of followers' lack of job control was positively related to leaders' dysphoria. The amount of support leaders thought they granted their followers was negatively related to leaders' levels of anxiety and depression (Giorgi et al., 2015).

Finally, one aspect regarding followers and leaders' health is followers' mental well-being. More specifically, it seems that when followers are in a positive mental state, this is also beneficial for leaders' mental health. While there is some evidence that followers' job induced tension is positively related to leaders' jobs stress (Westman & Etzion, 1999), followers' work engagement has been positively related to leaders' work engagement (Westman & Etzion, 1999; Wirtz, Rigotti, Otto, & Loeb, 2017). However, follower burnout has not been found to affect levels of leader burnout (Westman & Etzion, 1999), and followers' emotional exhaustion only affected leaders' exhaustion, if leaders' emotional self-efficacy was high (Wirtz et al., 2017).

These heterogeneous studies do not allow a clear inference regarding the relationship between followers' characteristics and leaders' mental health (SIC = -0.15, k = 13). This is not surprising, given the fact that very different constructs have been under investigation here. Even though we are unable to state clearly, whether followers can be considered a source of stress and

(ill-) health for leaders, we do believe this is a promising avenue for future research, as interaction with followers lie at the heart of leaders' job.

2.3.4.5 Career and achievement

Leaders and followers alike can suffer from a discrepancy between their career ideals and reality. Factors that are related to leaders' professional advancement and personal development such as unfair promotion practices, lack of appreciation, personal performance pressures, as well as feelings of incompetence or performance pressure can have adverse health impact. Findings related to leaders' career and achievements are discussed in the following section.

Development opportunities and career advancement

A factor that could constitute a health resource for leaders, are opportunities for personal and professional development at work, as well as career advancement. Development opportunities can take the form of performance feedback, which leaders can utilize to evaluate past and enhance future performance. Further, concrete development measures, such as training programs or responsibility for a new role, enable leaders to acquire new skills and develop themselves. Career advancement entails perceived opportunities to reach a higher job level (and status) within the organization, and is not necessarily linked to skill-development. Unfortunately, evidence regarding the relationship between leaders' opportunities for development, career advancement and their health is scarce.

Looking at development opportunities, female leaders' emotional exhaustion and psychosomatic complaints have bot been not predicted by organizational support, encouragement, training, development, and job challenge (Richardsen et al., 1999). Further, a development initiative targeted at young leaders' has not affected leaders' levels of interpersonal stress, as had been anticipated by the authors (Uen, Wu, & Huang, 2009). Only when integrated in a general latent factor of job resources (together with autonomy, control, and social support), have performance feedback and professional development been positively related to leaders' work engagement (Bakker &

Xanthopoulou, 2013), and did an increase in resources result in higher work engagement and a decrease in burnout (Schaufeli et al., 2009).

Looking at career advancement, one study found, that leaders' reported their perceptions of limited career advancement opportunities as major stressor. Males reported more career stress in this sample than their female colleagues (Shahzad et al., 2013). Another study looking at the impact of perceived promotion speed on self-reported physical health did not find any relationship between fast promotion practices and female leaders' current or past health. However, when the promotion process was perceived as slow, this related negatively to current health status. Leaders' whose promotion was facilitated by a mentor from another department reported lower health (D.-R. Chen, Lin, & Chung, 2008).

Overall, there is no evidence to support the idea that development opportunities alone constitute a health resource for leaders (SIC = 0, k = 2). This might be due to the fact, that the effect of development practices only becomes apparent with time, or is much more complex and thus only works in combination with other resources at the job (e.g. transfer and applicability). In the paragraph *interventions*, we will give an overview of the effects of development measures that have been specifically designed to foster leaders' health. While obstacles to leaders' career advancement seem to have a negative impact on leaders' mental and self-reported physical health (SIC = -0.5, k = 2), more research is needed to derive a definitive conclusion and clear implications.

Threat of job loss or status

While leaders are often seen as drivers of organizational change, and are responsible for making and communicating redundancy decisions, they themselves may be affected by a threat of job loss, or in the milder form, a threat of their current job status. It has been shown that status-threatening events at work may enhance leaders' physical health risk (Robinson & Inkson, 1994). Similarly, future job ambiguity has been negatively related to leaders' job satisfaction, however unrelated to their levels of fatigue (Jha, 1988). Perceived threat of job loss has predicted leaders' mental (McCormick,

1988; Roskies & Louis-Guerin, 1990), and self-reported physiological health (Roskies & Louis-Guerin, 1990), whereas objective threat of job loss has been unrelated to health outcomes (Roskies & Louis-Guerin, 1990). Finally, an imbalance between perceived effort and job insecurity has been related to leaders' depressive symptoms (Kuhnke-Wagner et al., 2011).

Overall, the available evidence indicates that leaders, similarly to employees without leadership responsibilities suffer from job insecurity. The threat to lose ones' job or status seems to be negatively related to leaders' mental (SIC = -0.67, k = 3) and physical (SIC = -0.5, k = 4) health.

Performance pressure

While there are many reports about the high demands of the leadership role, comparatively little research has been conducted on the consequences of leaders' perceived performance pressure. A study examining the job-strain model in leaders found that constant pressure to perform to a high standard was unrelated to leaders' psychological health (Noblet et al., 2001). However, two studies did find relationships between leaders' performance pressure and their levels of emotional exhaustion. First, performance demands (i.e. generating above average revenues, achieving below-average operation costs, achieving high growth, and securing above average liquidity) have been positively related to leaders' emotional exhaustion (Knudsen, Ducharme, & Roman, 2009). And female leaders have reported that concerns about their performance were one of the most stressful aspects of their job (Rogers, Li, & Ellis, 1994). This has been confirmed by a second study which found that the pressure to meet goals and targets predicted leaders' emotional exhaustion (O'Neill & Xiao, 2010).

Thus even though the evidence is scarce, examining concrete performance demands as antecedents for leaders' health seems like a promising avenue for future research. While we could not identify any evidence relating leaders' performance pressure to their physical health, the few available studies indicate a negative relationship between performance pressure and leaders' mental health (SIC = -1, k =3). More research is needed to confirm

these results, and to differentiate between different sources of pressure (e.g. internal vs. external).

2.3.4.6 Organizational structure and climate

The environment within which leaders operate (i.e. the organization) is likely to impact their health. In this paragraph we examine the available evidence regarding specific organizational characteristics as well as more soft variables such as organizational climate. Looking at overall measures of organizational variables, studies show that organizational factors and leaders' health are related. For example, a supportive organizational structure and climate assessed with the OSI have been positively related to leaders' mental and physical health (Shanfa et al., 1998). Similarly, organizational dysfunction has been positively related to leaders' stress levels (Spangenberg & Orpen-Lyall, 2000), and an overall measure of organizational factors (e.g. organizational stability, profitability, and funding) did explain a small amount of variance in leaders' self-reported change in health status (Lindorff, 1995).

Organizational structure

The organizational structure has a direct impact on leaders' leeway in decision-making as well as their actions, and thus can influence their mental and physical well-being. For example, leaders in a matrix organization are confronted with more interaction and potential conflicts of interest than leaders in a functional organization. In the following paragraph we discuss results regarding hard organizational factors such as structure, size, complexity, sector, decision-making processes, and organizational change.

First, organizational size is a very basic characteristic of an organization and influences the workload, processes etc. Organizational size has been positively related to leaders' stress levels in one instance (Lam, 1988), whereas it has been negatively related to leaders' emotional exhaustion, depersonalization, and reduced personal accomplishment in another (Tabacchi et al., 1990b). Further, a construct related to yet distinct from size, organizational complexity, has been negatively associated with leaders' stress levels (Crank, Regoli, Hewitt, & Culbertson, 1995). These contradicting findings could be

due to the fact that while leaders in large, complex organizations might be confronted with more challenges, they also receive more organizational support (e.g. benefits), which enable them to successfully deal with work-related stressors.

Further, researchers have examined whether the sector within which an organization operates has an impact on leaders' health. The results are conflicting. While one study found that female leaders working in the public sector were more likely to report poor health than their colleagues in the private domain (D.-R. Chen et al., 2008), results from another study (C. Lu et al., 2009) point in the opposite direction, showing that leaders in the private sector experience more stress and report more psychological strain, than leaders in a state owned organization. Several studies did not find any relationship between the organizational sector and leaders' mental (Kath et al., 2012; Widerszal-Bazyl et al., 2000) or physical health (Kath et al., 2012; C. Lu et al., 2009; Widerszal-Bazyl et al., 2000).

The way decisions are made and communicated within an organization can also have an impact on leaders' health. One study found that an organizational structure characterized by a high amount of centralization and formalization is negatively related to leaders' job stress (Joiner, 2001). In another study however, centralization was positively related to leaders' emotional exhaustion (Knudsen et al., 2009). The authors found further, that organizational long range strategic planning was negatively related to leaders' emotional exhaustion, whereas support for innovation was unrelated to leaders' mental health. Top-down communication problems were positively related to leaders emotional exhaustion, depersonalization, but unrelated to their personal accomplishment (Dolan & Renaud, 1992). These effects did not remain, when entered in the regression equation together with job-related stressors.

Organizational change refers to a change in organizational structure or processes. Downsizing is a particularly stressful form of organizational change, particularly for leaders who might not only be personally affected by redundancies, but also may be responsible for communicating layoffs.

This is reflected by an exploratory study linking downsizing to enhanced reports of leader burnout and strain (Armstrong-Stassen, 1997). In this context, the managerial level may also play an important role. One study accompanying middle and top-level leaders during a downsizing phase showed that mid-level leaders reported more physical health symptoms during downsizing than executives. Further, both middle level leaders as well as executives reported an increase in burnout symptoms cross-sectionally, however, these effects did not hold over time (Armstrong-Stassen, 2005).

Looking at the different aspects of organizational structure that have been empirically examined, it has been shown that organizational size and complexity are positively associated with leaders' mental health (SIC = 0.33, k = 3). Further leaders in the public sector appear to have better mental (SIC = 0.5, k = 4), but worse physical health (SIC = -0.25, k = 4) than their peers in private organizations. Finally, organizational forms of centralized decision-making, top-down communication problems as well as a lack of strategic planning appear to have a negative impact on leaders' mental health (SIC = -0.5, k = 8). While these results only reflect a general trend and are somewhat hard to interpret, as different measures and factors were examined, they show that the organizational structure is related to leaders' mental and physical wellbeing.

Organizational culture and climate

Leaders' perceptions of their working environment can have an impact on their well-being, as is shown by several studies examining culture and climate perceptions. Broad measures of organizational climate perceptions such as the OSI have been related to leaders' stress and mental well-being (Shanfa et al., 1998; Singh & Singh, 1992, 2007; Siu et al., 1999).

Important aspects of the organizational climate are organizational ethics and justice perceptions. Leaders who perceived their organizational culture as ethical, have reported more work engagement and reduced emotional exhaustion. The relationship between organizational ethics and emotional exhaustion has been mediated by leaders' ethical strain (Huhtala, Feldt, Lämsä, Mauno, & Kinnunen, 2011). Further, leaders who committed

to a job specific ethic (i.e. public service ethic in chief police officers) have reported less role stress, work alienation, and anomie (Crank et al., 1995). Next to the ethics within an organization, an organizational climate characterized by interactional and procedural justice, has been related to positive health outcomes. Interactional justice climate has been positively related to positive affect and negatively to emotional exhaustion (Bernerth, Whitman, Walker, Mitchell, & Taylor, 2016). Justice perceptions also affect leaders' physiological health. Perceived procedural justice has been negatively related to self-reported physiological health symptoms in female leaders (D.-R. Chen et al., 2008).

Other aspects of organizational culture that have been related to leaders' physiological health are bureaucracy and organizational acceptance. More specifically, an organizational climate characterized as bureaucratic has been associated with low levels of high-density lipoprotein cholesterol and high levels of low-density lipoprotein cholesterol, which can be considered a risk factor for cardiovascular disease (Bernin et al., 2001). Finally, leaders who felt accepted by their organization, have reported less physiological health symptoms (Richardsen et al., 1999).

The results reviewed in this paragraph indicate, that an ethical culture and fair organizational climate are beneficial for leaders mental health (SIC = 1, k = 5). Further, even though the evidence is scarce, a similar relationship with physical health (SIC = 1, k = 3) has been found. Here, bureaucracy appears to have a negative, and procedural justice as well as organizational acceptance, seem to have a positive impact on leaders' health.

2.3.4.7 Home - work interface

One question that has been examined quite extensively in a leadership context is whether the tension between home and work leads to adverse health outcomes. Below, we first discuss studies that have focused on leaders' family life, and the mutual impact from family to work and from work to family related tension. Then, we present results related to more general, non-work related health predictors (e.g. lifestyle choices) before we turn to individual antecedents of mental and physical well-being.

Work and family

Looking simply at leaders' marital or parental status is insufficient to explain differences in health outcomes. While one study found that being married could be a potential stress-buffer for leaders (Adebowale & Adelufosi, 2013), another did not confirm this result (Kirkcaldy, Brown, & Cooper, 1998). Similarly, the number of children has been negatively related to depersonalization. (Tabacchi et al., 1990b) in one, but positively related to emotional exhaustion in another study (Fiksenbaum et al., 2010). As the relationships between the home – work interface and leaders' health are more complex, interactional constructs such as work family and family work conflict have yielded clearer results.

Leaders' work family conflict, i.e. the adverse impact that work-related responsibilities have on leaders' family life, has been related to mental health outcomes such as increased irritation, depression (Jacobshagen et al., 2005), emotional exhaustion (Richardsen et al., 1999), and job stress (Judge, Boudreau, & Bretz, 1994). Further work family conflict has been related to physiological health outcomes such as psychosomatic complaints (Jacobshagen et al., 2005; Richardsen et al., 1999), psychosomatic strain (O'Driscoll et al., 2003), and self-reported health status (D.-R. Chen et al., 2008; Shanfa et al., 1998; Spector, Cooper, Poelmans, Allen, O'Driscoll, Sanchez, Oi Ling Siu, et al., 2004). Even though this evidence makes a strong case, there is also some evidence to the contrary. More specifically, two studies were unable to relate work family conflict to emotional exhaustion (Saleh, Quick, Sime, Novicoff, & Einhorn, 2009), and the work home interface to mental or physical well-being (Siu et al., 1999). Further, not only can work have an adverse impact on leaders' family life, the reverse is also possible, namely an impact from leaders' family life on their work. Family work interference has been related to psychological strain (O'Driscoll et al., 2003), reduced mental well-being (Sutherland & Davidson, 1989), job stress (Judge et al., 1994), and burnout (Ten Brummelhuis, Haar, & Roche, 2014). Moreover, family problems have been related to leaders' stress (Arora, 2013) and mental health (McCormick, 1988). However a positive family life can apparently also enrich leaders' work.

One study showed that family to work enrichment was positively related to leaders' work engagement (Ten Brummelhuis et al., 2014).

Organizations are aware of the impact that leaders' family life can have on their work, performance, and health. In order to counteract negative influences, some organizations establish family-friendly policies to support their employees in managing the home – work interface. One study investigating the relationship between family supportive organizational policies and work-family conflict could not confirm the mediation between benefit availability, policies and conflict. However, when organizations were perceived as family friendly by their members, leaders reported less work family interference (O'Driscoll et al., 2003). This finding was confirmed in another study, were perceptions of organizations as being family-friendly were negatively related to work-family interferences, which in turn increased leaders' life satisfaction (Lapierre et al., 2008).

Overall, the available evidence demonstrates that work – home and home – work interference can have a negative impact on leaders' health. In terms of mental health both, work family conflict (SIC = -0.67, k = 6), and family work conflict (SIC = -1, k = 7) have been shown to present a high risk factor. In terms of physical health, only evidence regarding work family conflict exists (SIC = -0.86, k = 7). Although organizational policies targeted at the management of the home – work interface do not directly impact leaders' health, they can help in reducing perceived conflicts between the two life domains. Leaders' life outside of work can entail other activities and events that are not necessarily related to family matters, e.g. charity work. We now turn to discuss health effects of broader, non-work related factors.

Non-work related factors

Leaders' life outside of work does not exist exclusively within the family domain. Some studies have examined the impact of leaders' private life in general, rather than referring specifically to family issues. As will be shown in the discussion below, however, many of the most stressful non-work related events with an impact on leaders' health do also somewhat relate to the family domain.

Several studies have addressed the question whether stressful life or stressful work events are more important in triggering leaders' ill-health. While one study found that work-related factors are generally more important in predicting work-related stress symptoms, the event which impacted leaders most, was the breakdown of a marriage or relationship (Lindorff, 1994). Further, interactions between work and private life have been found to predict burnout in first-line, but not middle managers, indicating that there might be a moderating impact of hierarchical level (Lundqvist et al., 2013). Non-work hassles have been negatively related to leaders' psychological well-being (J. H. Cohen, 1990), and the home - work interface has been correlated negatively with leaders' mental well-being (Spector, Cooper, & Aguilar-Vafaie, 2002).

In terms of physical health, one study identified non-work related stressors (e.g. economic situation, drug or alcohol abuse of a family member or close friend) as more important in predicting leaders' health than work related stressors (Robinson & Inkson, 1994), and non-work hassles have been related to self-reported physical ill-health (Shanfa et al., 1998). One study providing somewhat mixed findings showed that leaders' home – work interface was unrelated to self-reported physical strain in an Iranian and negatively correlated with physical strain in a US sample (Spector, Cooper, & Aguilar-Vafaie, 2002).

Next to these broad measures of the private life domain, some studies examined leaders' physical activity and lifestyle choices in relation to their health. It was found that physical activity can buffer stress outcomes and decrease coronary risk factors (Bolton, Wilder, & Strydom, 2004; Howard et al., 1986). A study looking at the leisure styles of British and German managers found that a competitive leisure style had a negative impact in the UK and a positive impact in Germany. While UK leaders' job stress seemed to carry over to their lifestyle, German leaders' seemed to compensate their job stress through a competitive lifestyle. They reported lower levels of work-related stress and better physical health (Kirkcaldy & Cooper, 1993). Further, other extra-occupational activities, i.e. self-education, housework have been positively related to leaders' cardiovascular risk (Bugajska et al., 2011).

Overall, stressful, non-work related factors have been shown to be negatively related to leaders' mental (SIC = -1, k = 5) and their physical health (SIC = -0.25, k = 4). It seems to be important to match stressors and stress outcomes. One study found that life stress was positively related to stressful life events, whereas work stress was positively related to stressful work events (Ghorbani, Watson, & Morris, 2000). Future research should consider this distinction of the two domains. Looking at adaptive non-work related behaviors, physical activity appears to be beneficial to both leaders' mental and physical well-being, whereas results on the impact of leaders' lifestyle choices are somewhat conflicting.

2.3.4.8 Individual characteristics

One factor that has a long history in leadership research in general, are the individual characteristics (i.e. personality traits) of the leader. The focus on personality factors in early leadership research is reflected by the wealth of studies investigating relationships between leaders' personality and their health. We start this paragraph by discussing the role of personality traits, and will continue with more general characteristics such as cognitions, demographic factors, and physical disposition.

Type A behavior pattern (TABP)

An individual difference variable that has been considered particularly relevant with regard to leaders and health is the TABP, as it overlaps with the somewhat stereotypical conception of a highly ambitious, overachieving, and constantly stressed executive. This is important in relation to leaders' health, as enhanced and continuous stress reactions are characteristic for people with TABP. TABP is a multidimensional construct and the sub dimensions depend in part on the measurement tool used to assess the pattern. The Jenkins Activity Survey (JAS) assesses job involvement, hard-driving, and competitive-speed-impatience (Jenkins, Zyzanski, & Rosenman, 1979). Further research has identified two independent factors of TABP, namely impatience-irritability, and ambition-energy (Spence, Helmreich, & Pred, 1987), or, measured with the Framingham score, competitive striving and speed-impatience (Houston, Smith, & Zurawski, 1986). Finally, a profile measure for

TABP measures the six sub dimensions impatience, anger, work involvement, time urgency, job dissatisfaction, competitiveness (Gray, 1989).

The evidence for a relationship between TABP and health is mixed, which can partly be explained by the multifaceted nature of the construct, as well as the different measurement approaches. In terms of mental well-being, one study related TABP to increased stress, and reduced satisfaction (C. L. Cooper, Kirkcaldy, & Brown, 1994), while other research did not find any relationships between TABP and mental health (Cassidy & Dhillon, 1997; Sutherland & Davidson, 1989) or stress (Sager, 1990). Looking at TABP and physiological health, evidence for a negative relationship (Cassidy & Dhillon, 1997; C. L. Cooper et al., 1994), as well as a positive relationship (Robinson & Inkson, 1994) exists.

The findings become even more complicated when considering the different measurement approaches. For example, a relationship between TABP and leaders' systolic blood pressure was only found, when assessed with the profile measure (Gray, Jackson, & Howard, 1990). The study did not find any relationship between TABP and blood pressure using the continuous approaches (e.g. Framingham Score, JAS).

Other studies do show relationships between continuous measures of TABP and leaders' health, however the results differ by sub dimension and are sometimes conflicting. Impatience-irritability (e.g. "When a person is talking and takes too long to come to the point, how often do you feel like hurrying the person along?") was found to be negatively related to leaders' psychological (Kivimäki, Kalimo, & Julkunen, 1996) and physiological health (Kivimäki et al., 1996; L. Lu, Tseng, & Cooper, 1999). Other research did not confirm this finding, as no relationship between impatience-irritability and health was found (Srivastava, 2009). Finally, ambition-energy (e.g. "How seriously do you take your work?") was found to mediate the relationship between development opportunities and physical as well as mental health. Leaders with high scores on ambition-energy, developed less symptoms of ill-health, when confronted with many development opportunities (Kivimäki et al., 1996). And the achievement striving component of TABP enhanced

the relationship between stress and strain (i.e. dissatisfaction, anxiety related illnesses) (Srivastava, 2009).

Although theoretically appealing, the empirical evidence fails to establish a clear relationship between TABP and leaders' mental (SIC = -0.33, k = 6) and physical health (SIC = -0.44, k = 9). The overall trend appears to be negative though. In assessing relations between TABP and health, it is important to consider the different measurement approaches and sub-dimensions of the construct.

Self-evaluations and self-concept

Leaders' self-concept has been a subject of investigations in few studies, but a link between self-concept and leaders' health has been proposed. The results presented in this paragraph relate to different domain-specific self-evaluations, such as managerial or emotional self-efficacy, and leaders' well-being.

A study examining leaders' managerial self-efficacy found that leaders who did not believe in their managerial skills, reported more symptoms of physical strain. This effect was particularly pronounced when leaders were confronted with very stressful situations. This effect did not apply to psychological strain however (C. Lu et al., 2005). Further, leaders' core self-evaluations (CSE) have been linked to changes in emotional exhaustion over time. CSEs, or leaders' perceptions of themselves as worthy, competent, in control and emotionally stable had a beneficial effect on mental health as they were negatively related to emotional exhaustion (Spence Laschinger & Finegan, 2008). A similar result was obtained in terms of self-esteem, which has been negatively related to levels of depersonalization (Dolan & Renaud, 1992), but was unrelated to leaders' job stress (Sager, 1990).

Another study examined how female leaders' perceptions of themselves as females and leaders affected their levels of work-related stress. The authors found that if female leaders had a positive gender and leadership identity, they experienced less identity conflict and, in turn, less stress at work (Karelaia & Guillén, 2014). A less work specific self-concept, namely

leaders' self-schema for play (i.e. the conception that one is relaxed, easygoing, and pursues leisurely activities) has been related to numerous positive health behaviors and self-reported health outcomes in leaders (Doster et al., 2006).

Only in one case has a positive self-image been shown to have negative health consequences. The authors showed that leaders' emotional self-efficacy, i.e. their beliefs in their emotional competencies, catalyzes the crossover process of emotional exhaustion from followers to leaders (Wirtz et al., 2017), resulting in higher emotional exhaustion over time.

Overall, a positive self-concept, regardless of whether it is related to the work domain or not, appears to foster leaders' physical health (SIC = 1, k =2). While the relationship between a positive self-concept and leaders' mental health has also found to be positive (SIC = 0.33, k = 6), the evidence is much less clear.

Locus of control (LOC)

Having looked at leaders' self-evaluations, we now turn to leaders LOC, which constitutes a more specific aspect of leaders' core self-evaluations. The LOC can vary between external and internal. Individuals with an internal LOC feel that they have an impact on their environment and thus are in control of certain (work) outcomes. An external LOC is associated with a feeling of powerlessness and the idea that external factors and circumstance determine (work) outcomes. As has been shown in a previous paragraph, leaders' health is impacted by the amount of control they have over people or processes. The same can be said for their internal control orientation.

Reporting an internal LOC has been related to enhanced mental (Black, 1990; Dolan & Renaud, 1992; L. Lu et al., 2000, 1999; Rahim, 1995; Siu, Spector, Cooper, Lu, & Yu, 2002; Spector et al., 2001; Spector, Cooper, Sanchez, et al., 2002), as well as physical health (Lindorff, 1995; L. Lu et al., 2000; Robinson & Inkson, 1994; Siu et al., 2002; Spector et al., 2001; Spector, Cooper, Sanchez, et al., 2002). However, when tested in interaction with work stress, individuals with an internal control orientation reported poorer men-

tal health outcomes (L. Lu et al., 1999). Further, an internal locus of control has been found to moderate several stressor – strain relationships (L. Lu et al., 2000; Siu et al., 2002).

An external locus of control has been related to increased self-reported physical ill-health via an increase in job stress, and a decrease in satisfaction (C. L. Cooper et al., 1994). These results are confirmed by other studies that uncovered a positive relationship between external LOC and leaders' levels of stress (Black, 1990; Owen, 2006), as well as mental and physical strain (Spector, Cooper, & Aguilar-Vafaie, 2002).

Next to the articles that examined leaders' locus of control, we identified two studies, which looked at related constructs (ego-strength and sense of coherence). Ego-strength, described as the ability to tolerate and effectively deal with external threats, has been negatively related to job anxiety (Singh & Singh, 1992). Another variable related to leaders' control orientation that has been examined in terms of health effects is leaders' sense of coherence. Similar to ego-strength, a strong sense of coherence is described as the perception and evaluation of the external environment as predictable and controllable. A strong sense of coherence has been related to physiological health (Kivimäki et al., 1998). The authors also tested sense of coherence as a moderator for different stressor-strain relationships, however could not verify a moderating role of this personality trait.

Overall, an internal control orientation appears to be positively related to leaders' health. The evidence suggests a strong positive relationship between an internal control orientation and mental (SIC = 0.85, k = 13) as well as physical health (SIC = 1, k = 2).

Big five

Comparatively little evidence regarding relationships between leaders' big five traits (i.e. openness, conscientiousness, extraversion, agreeableness, and neuroticism) and health and well-being outcomes is available. We only identified two studies that looked at two of the big five traits, namely extraversion and neuroticism. Both studies found a positive relationship between

neuroticism and emotional exhaustion (Courtright et al., 2014; O'Neill & Xiao, 2010). While one study found a negative relationship between extraversion and emotional exhaustion (O'Neill & Xiao, 2010), extraversion was unrelated to emotional exhaustion in the other one (Courtright et al., 2014). However, in this case, extraversion was positively related to work engagement, indicating overall that extraversion may be beneficial whereas neuroticism is detrimental to leaders' psychological well-being.

Too few studies have examined leaders' big five traits in relation to their health to come to a definitive conclusion at this point. Results from the two available studies indicate a trend toward a positive relationship between and extraversion and leaders' mental health (SIC = 0.67, k = 2), and a negative relationship between neuroticism and leaders' mental health (SIC = -1, k =2). Evidence regarding effects on physical health is missing.

Need for power

The need for power describes individuals' desire and striving to reach and maintain a position with control over others. As power is an important aspect and inherent part of the leadership role, i.e. the main task of leadership is to influence others, it does not surprise, that individual differences in need for power have been examined in a leadership context.

A high need for power in leaders has been shown to buffer stress and stress-related symptoms (Hendrix & Stahl, 1986). Another study showed that it might be important to distinguish between an explicit and an implicit need for power. The authors assessed leaders' power motives using explicit and implicit methods and showed that a discrepancy between implicit and explicit motives explains variance in leaders' well-being. Specifically, a low implicit power motive combined with a high explicit power motive resulted in reduced well-being and enhanced life stress. On the contrary, high implicit power motives coupled with low explicit power motives increased leaders' well-being. Leaders' motives in terms of affiliation and achievement did not predict their well-being (Kazén & Kuhl, 2011). A different, but somewhat related construct that has been examined concerns leaders' aspirations. While extrinsic aspirations, such as striving for wealth or image, have been positive-

ly related to emotional exhaustion and burnout, intrinsic aspirations, such as striving for positive relationships, have been negatively related to emotional exhaustion and cynicism. Aspirations for fame, community, and personal growth have not been related to leaders' health (Roche & Haar, 2013).

A high need for power can be positively related to leaders' mental health, however, it appears to be important to distinguish between explicit and implicit power motives. Leaders should also be careful what they are striving for. Evidence from one study implies that extrinsic aspirations are negatively and intrinsic aspirations positively related to their mental health.

Hardiness

Hardiness, a personality trait that is associated with stress-resistance and resilience has been examined in relation to leaders' health. However, only few studies are available in a leadership context. While one study uncovered positive correlations between hardiness and leaders' stress ratings (Ghorbani et al., 2000), another showed a more expected result, linking leaders' hardiness to fewer sick hours, regardless of the amount of stress reported at work (Judkins, Massey, & Huff, 2006). Further, hardiness has been negatively related to stress and burnout (Kelley, Eklund, & Ritter-Taylor, 1999). Not examining hardiness but stress reactivity, which is a related construct, one study uncovered significant differences in health status, behavior and chronic stress between groups of leaders with high stress reactivity and low stress reactivity. Leaders in the high reactive group had higher levels of psychological ill-health (Limm et al., 2010).

Overall, the evidence linking leaders' hardiness to their mental health is weak (SIC = 0, k = 2). Hardy leaders do seem to report less sick hours than their less hardy peers. No further evidence on relationships between hardiness and physiological health exist.

Other indicators of individual differences

Next to the personality variables described above, several other constructs related to individual differences have been examined in connection

with leaders' health. As they could not be clustered, which reflects the myriad of personality concepts available, they will be presented in this paragraph.

One study found that several of the 16 personality factors defined by Cattell in the 1970s (Cattell & Mead, 2003) were related to leaders' health. More specifically, the factors *apprehensive*, *tense*, *shy*, *low self-concept*, *emotional instability*, *introverted*, and *suspicious* were positively correlated with self-reported ill-health. Further, *apprehensive*, *tense*, *shy*, *low self-concept*, *emotional instability*, *practical*, *suspicious,* and *submissive* were related to leaders' anxiety levels (Richardson & Tang, 1986).

Several distinct, but somewhat related personality constructs that have been linked to leader health, revolve around the experience, expression and management of (positive and negative) emotions. For example, emotional intelligence has been related to leaders' general health, reduced levels of stress, and a high quality of working life in leaders (Slaski & Cartwright, 2002). Further, trait optimism has been positively related to leaders' psychological well-being (J. H. Cohen, 1990). A more negative trait, namely negative affect has been positively related to leaders' reports of work-family conflict. Leaders with high positive affect on the other hand reported more work-family enrichment (Michel, Pichler, & Newness, 2014). Surprisingly, leaders' trait anxiety has been negatively related to leaders' health risk (Robinson & Inkson, 1994).

Leaders who are somewhat addicted to their work (actually a common stereotype people associate particularly with top level executives) might suffer from health impairment. While workaholism correlated positively with work engagement, it also has been related to mental health problems (Midje et al., 2014), indicating that even though an extensive commitment toward one's work might be rooted in positive affliction, it still might take its toll. Another study found somewhat contradicting results, as they could not identify a relationship between leaders' tendency to exert enhanced effort at work and depressive symptoms (Kuhnke-Wagner et al., 2011).

Another study examined the traits instrumentality and expressiveness in relation to leaders' job burnout (Hawkins & Hawkins, 2016). Instrumental-

ity or agency in leaders is characterized by a hostile and dictatorial manner, whereas expressiveness or communion is characterized by a cooperative, servile attitude. The authors found that leaders who scored high on both traits reported lower tedium, depression and burnout. Less dominant leaders, i.e. those scoring low on expressiveness and high on communion, reported higher levels of burnout.

Even though organizational factors were more important predictors, leaders' group vs. self, and risk vs. security orientation have been shown to predict levels of burnout. More specifically, group vs. self-orientation predicted emotional exhaustion and depersonalization, whereas risk vs. security orientation predicted personal accomplishment (Dolan & Renaud, 1992).

Overall personality factors do seem to play an important role as predictors of leaders' health, although the myriad of personality constructs used make it difficult to derive at a clear conclusion in this regard. The importance of personality in predicting leaders' health is underlined by a study that compared different health-models. The authors found that the indigenous model, a model in which personality factors and coping mechanisms precede perceptions of job stress and ill-health, explained more variance than alternative models, where personality traits played a less predominant role (C. L. Cooper & Baglioni, 1988). In the following paragraph we will discuss leaders' coping styles, which also play an important role as health predictors.

Cognition and coping

Particularly with regard to mental health, leaders' ability to manage stressors and demands can play an important role. While adaptive coping behaviors have been unrelated to physiological health, they have been linked to reduced stress levels as well as increased mental health (C. L. Cooper et al., 1994; Siu et al., 1999). In this paragraph we discuss findings that relate leaders' (cognitive) coping styles, as well as coping behaviors to their health. We start by presenting results related to avoidance, social-support, and problem-solving coping, and continue with other coping behaviors.

Avoidance coping, i.e. ignoring the stressor or problem, has been negatively related to leaders' health. Avoidance coping has been linked to overall (psychological, physiological, and behavioral) strain (Brymer, Perrewe, & Johns, 1991), anxiety and depression in female leaders (Rout, 1999), as well as self-reported illness (Cassidy & Dhillon, 1997). Further, stressed leaders tend to engage more in avoidant coping styles, rather than social-support or problem-solving coping (Spangenberg & Orpen-Lyall, 2000). Social-support coping entails seeking others' support when confronted with a problem. While we have seen in a previous paragraph that social support can be beneficial to leaders' health, social support coping has been negatively related to leaders' physical well-being (Siu et al., 2002). Finally, problem-solving, a more solution-oriented coping style, has been positively related to leaders' mental and self-reported physical health (Cassidy & Dhillon, 1997). More specifically, leaders who were confident in their problem-solving abilities reported less health problems and less health-related behaviors (e.g. taking medication, having medical checkups). Finally, leaders who felt responsible for their problems and were disappointed with their coping abilities, reported reduced psychological well-being.

Self-assessed abilities to cope with responsibilities, conflicts, and time pressure impacted female leaders' heart rate at work and at home (Makowiec-Dabrowska & Bortkiewicz, 1989). Male leaders' heart rate was impacted by how well they felt they were coping with mental difficulties and conflicts at work (Makowiec-Dabrowska & Bortkiewicz, 1990). Comparing the two studies, self-assessed coping skills appear to be particularly important for female leaders, whereas males respond more to stressful job characteristics. Not only leaders' coping efficacy impacts their health, but also the actual behaviors they engage in when confronted with work demands. Alcohol and recreational drug use, overeating, reduction in eating, spending money, spending time with friends, and religious faith have been identified as maladaptive, as they were positively related to psychological and physiological strain. Use of prescription medication, making appropriate changes, organizing time and priorities, exercise, hobbies and relaxation were unrelated to overall strain (Brymer et al., 1991). Two work-related behaviors that have been related to

leaders' health are self-talk and time management skills. While constructive self-talk has been negatively related to job strain, dysfunctional self-talk was unrelated to leaders' strain (Rogelberg et al., 2013). Leaders' time management skills are related to their reports of job stress (Grissom, Loeb, & Mitani, 2015).

Finally, we identified two articles which related a cognitive state or process to leaders' health: mindfulness and religiosity. Mindfulness has been shown to be beneficial in that it was negatively related to leaders' anxiety, depression, negative affect, emotional exhaustion and cynicism (Roche, Haar, & Luthans, 2014). Further, leaders' values in terms of religiosity are negatively related to burnout (Somech & Miassy-Maljak, 2003). Meaning of work has been identified as a mediator in this relationship in the sense that a higher religiosity is positively related to meaning which, in turn, results in reduced reports of burnout.

As coping can take on various forms in terms of cognitions and behaviors, and only few studies examined each coping style or mechanism in a leadership context, it is difficult to formulate a general conclusion. Coping strategies seem to have a stronger impact on leaders' mental rather than their physiological health. Further, a trend is visible, indicating that avoidance coping may be negatively related to leaders' mental (SIC = -1, k =3) and physical health (SIC = -1, k = 2), whereas confidence in ones' problem-solving abilities appears to have a positive impact on (self-reported) physical health (SIC = 1, k = 3).

2.3.4.9 Demographics

Demographic variables can have an impact on leaders' mental and physical well-being. While we do present several studies here that have examined relationships between leaders' demographic characteristics and their health status, we would like to emphasize that particularly this section may not be complete. Age and gender are popular control variables, and it was not feasible to include all effects of the 184 articles here. We included studies that examined main effects of demographic characteristics on leaders' health.

Gender

The demographic variable that has received most attention in leadership research is gender. Due to strong practical implications, particularly with regard to leadership positions (e.g. pay-gap, glass ceiling), male and female leaders have been compared in many respects, including health outcomes. Below we present findings regarding differences between male and female leaders in the perceived quantity and quality of work stress, as well as differences in health status.

Looking at how male and female leaders perceive their work environment and particularly, the stressors associated with their work, results are mixed. While one study did not identify differences in stress perceptions between males and females (Owen, 2006), other results suggest that females experience higher levels of work-related stress (Kelley et al., 1999; Spangenberg & Orpen-Lyall, 2000). Regarding the quality of work stress, female and male leaders tend to experience different work demands as stressful. In a study that compared the different OSI dimensions, male leaders reported the organizational climate as more stressful than their female colleagues (Miller et al., 2000). Further, males experienced more stress from career related (e.g. under promotion, having to move to advance ones career) and females from relationship related factors (feeling undervalued, lack of supervisor support). Next to shared pressures (e.g. workload, time pressure), females listed poor interpersonal relationships at work, rate of pay, too much responsibility, sex discrimination, prejudice, and lack of domestic support as additional sources of stress (Broadbridge, 2000). Further, female leaders reported more illegitimate tasks than males (Björk et al., 2013), lower levels of mental wellbeing when operating in a male-dominated environment (Gardiner & Tiggemann, 1999), and more difficulties in coping with senior subordinates (Uen et al., 2009).

We now turn to results regarding differences between male and female leaders' health status. Overall there do not appear to be differences in mental and physical health (Bortkiewicz et al., 1998; Gardiner & Tiggemann, 1999; Kirkcaldy et al., 1998). However, female leaders do report more presenteeism

than males (Gosselin et al., 2013). Further, evidence suggests that different recreational processes may apply to male and female leaders. One study showed that work demands raised blood pressure for both genders. While males' blood pressure returned to normal levels after work, females' did not (Frankenhaeuser et al., 1989).

Overall, in the studies presented here, female leaders reported more mental (SIC = -0.38, k = 8) and physical strain (SIC = -0.5, k =4) than their male colleagues. It needs to be considered however, that female leaders are also confronted with additional challenges (e.g. illegitimate tasks, different compensation) that can cause these negative outcomes. We would like to emphasize here, that the negative relationship between female gender and health is likely impacted by additional work stressors (Posig & Kickul, 2004).

Age

One could easily assume, that leaders' health deteriorates with age, as does the physical condition of any human. However, an alternative explanation is also plausible. Particularly in terms of mental health, older leaders' accumulated experience within and outside of work may equip them better than their young colleagues to deal with the demands of the leadership role.

While some studies indicate negative relationships between leaders' age and their job stress (Mahmood, Zamir, Qurat-ul-Ain, Nudrat, & Zahoor, 2013), work-home related stress (Kirkcaldy et al., 1998), emotional exhaustion (O'Neill & Xiao, 2010; Tabacchi et al., 1990b), and psychological well-being (Siu, Spector, Cooper, & Donald, 2001). Other studies did not find any relationship between leaders' age and their job stress (Kath, Stichler, Ehrhart, & Sievers, 2013; Sager, 1990). Looking at physiological health indicators, age has been positively related with artery disease (Kermott, Cha, Hagen, & Behrenbeck, 2013), psychophysical well-being (Gadinger et al., 2011), and presenteeism (Gosselin et al., 2013). Absenteeism was unrelated to age. One study found that leaders between the age of 35 and 45 reported more ill-health than older and younger age groups (Richardson & Tang, 1986). The authors interpreted this as the midlife crisis symptom.

Overall, the evidence suggests that leaders' mental health improves with age (SIC = 0.71, k = 7), whereas their physical health decreases (SIC = -0.75, k = 4). This is in line with the assumption that leaders' accumulated experience provides them with sufficient resources to deal with demanding aspects of their role.

Tenure

Leaders' age and tenure are two interrelated constructs. Considering the positive relationship between age and mental health, we assumed that results would point in a similar direction with regard to tenure. The available evidence presented below somewhat confirms this notion, however not conclusively.

Leaders' organizational tenure has been positively related to their work engagement (Fiksenbaum et al., 2010), positive affect (Kuruüzüm et al., 2008), and negatively to experienced job stress (B. S. Cooper et al., 1988; Mahmood et al., 2013), emotional exhaustion (Tabacchi et al., 1990b), and depression (Kuruüzüm et al., 2008). Further, leaders' tenure within an operational function (e.g. personnel, sales) has been related to effective crisis management (Menon & Akhilesh, 1994). Young leaders with longer tenure reported less difficulties in coping with senior subordinates than their colleagues who were new to the job (Uen et al., 2009).

Next to this positive evidence, several articles found no relationship between tenure and health (Kath, Stichler, Ehrhart, & Sievers, 2013; Kirkcaldy et al., 1998). Some studies even found health impairing effects. For example, leaders' organizational, job, and role tenure has been positively related to emotional exhaustion, psychological, and psychosomatic symptoms (J. H. Cohen, 1990; Fiksenbaum et al., 2010; Richardsen et al., 1999).

Overall, the evidence for a positive relationship between leaders' tenure and their mental health is not as strong as expected (SIC = 0.4, k = 10). This can be explained by an accumulation of work demands over the time of employment, which results in psychological strain.

Physical disposition

A relatively obvious health predictor is leaders' physical disposition. Available evidence confirms the assumption that different health indicators are positively correlated, and that a healthy disposition is related to healthy work attendance.

More specifically, high body weight and skinfold thickness have been found to increase leaders' risk for cardiovascular disease (Jones, Klag, Sakai, Itoh, & Comstock, 1992). Another cardiovascular disease risk factor for leaders is pre-hypertension and hypertension, which have been identified to correlate with hypercholesterolemia, obesity, smoking, and a sedentary lifestyle (less than 30min of exercise on at least 3 days a week). However, hypertensive leaders were not more likely to have myocardial infarction, coronary revascularization, or instances of sudden death in their family history (Grace & Semple, 2012). Health problems, particularly back problems, gastritis, insomnia, emotional problems, allergies and comorbidity have been positively related to presenteeism, whereas absenteeism has been related to asthma, blood pressure problems, and thyroid problems (Gosselin et al., 2013). Finally, leaders' energy levels have been found to predict healthy work attendance. Leaders who felt well rested after sleep and who reported having energy left to do domestic work after work, had more healthy work attendance and less burnout over time (Skagert et al., 2012).

Overall, the available evidence indicates a positive relationship between a healthy physical disposition (e.g. healthy body weight) and leaders' physical health (SIC = 0.83, k = 6). We could not identify any studies relating physical and mental health indicators.

2.3.4.10 Job satisfaction

According to the managerial stress model (C. L. Cooper et al., 1988) that constitutes the main framework for our review, job attitudes are considered an individual level outcome. We found several articles that have examined job attitudes, particularly job satisfaction, as predictors for leaders' health status, and thus included job satisfaction as a predictor category.

Leaders' job satisfaction has been negatively related to job stress (Judge et al., 1994; Owen, 2006; Sager, 1990), emotional exhaustion, depersonalization, and reduced personal accomplishment (Kuruüzüm et al., 2008; R. T. Lee & Ashforth, 1993a), and positively to mental and physical health (Gustainienė & Endriulaitienė, 2009). However, these beneficial effects might not necessarily translate into behavior, as no relationship has been found between job satisfaction and absenteeism or presenteeism (Gosselin et al., 2013).

Overall, these findings support the notion that leaders' satisfaction with their job can present a protective factor and is positively related to mental health (SIC = 1, k = 6). Not much evidence exists relating leaders' job satisfaction to physical health. Differences between self-reported physical health and healthy work attendance indicate however that this relationship might be more complex (SIC = 0.5, k = 2).

2.3.4.11 Stress

In line with the health definition in this article, we have thus far treated measurements of managerial stress as a mental health indicator. However, stress can also be conceptualized as a *predictor* for other health outcomes, e.g. burnout. Stress results when people appraise a situation as threatening and, in a subsequent step, perceive themselves unable to adequately cope with this threat (Folkman & Lazarus, 1988; Lazarus, 1999). The resulting negative emotion, or cognitive state labeled as stress, can theoretically have unfavorable mental or physical consequences. This has been examined in several studies discussed below.

Please note, that this predictor category is somewhat diffuse, as stress is generally operationalized as leaders' perception of different work demands as stressful. These ratings could have consequently been subcategorized according to their content, e.g. as factors intrinsic to the job. The differentiation between stress (e.g. the perception of a high workload as stressful), and work demands (e.g. actual workload*)* is merely a theoretical one, as both are usually assessed via self-report, thus essentially measuring perceptions. While stress and demands should be highly inter-correlated (e.g. a leader ex-

periencing stress from workload will likely report a high workload), we nevertheless decided to include stress as separate predictor category. This way we account for leaders' cognitive appraisal of certain predictors, rather than solely regarding the predictors themselves (i.e. without adding the cognitive layer). Further, we account for the authors' intentions and theoretical considerations.

Stress, i.e. leaders' perception of the inherent demands of their job as negative, has been positively related to emotional exhaustion, depersonalization and anxiety (Srivastava, 2009), overall burnout (Jamal & Baba, 2000; Rahim, 1995) self-rated psychological strain (Brymer et al., 1991; Kath et al., 2012; Kath, Stichler, Ehrhart, & Schultze, 2013), and job-induced tension (Westman & Etzion, 1999). Leaders' stress reactivity, i.e. the extent to which they react to stress has also been related to several negative health outcomes such as psychosomatic complaints, depression, and anxiety (Limm et al., 2010).

In terms of physical health, stress has been positively related to pulse rate, blood cholesterol (Adebowale & Adelufosi, 2013), coronary risk factors (Bolton et al., 2004), self-rated physiological strain (Brymer et al., 1991; Kath et al., 2012), cortisol levels (Teixeira et al., 2015), heart rate (Lumley et al., 2014), sick leave (Judkins et al., 2006), and autonomic nervous system reactivity in males (Teixeira et al., 2015). No relationships were found between stress levels and leaders' blood triglyceride (Adebowale & Adelufosi, 2013), neuroendocrinological functioning (Bernin et al., 2001), artery disease (Kermott et al., 2013), and sick leave (Lindholm, 2006).

Not only have the physiological correlates of job stress been examined, but also consequences of other mental health indicators such as burnout and work engagement. An impairment of mental health in terms of burnout or reduced work engagement has been shown to impact the nature of leaders' absenteeism behavior in the following year (Schaufeli et al., 2009). The study demonstrated, that leaders with higher levels of burnout were absent for longer time periods, but not more frequently, compared to leaders with lower burnout levels. Leaders with reduced work engagement on the

other hand, were absent more frequently but not for longer periods than their highly engaged peers. Burnout or work engagement do not seem to have any physiological consequences, as no relationships with allostatic load (Langelaan, Bakker, Schaufeli, van Rhenen, & van Doornen, 2007), unfavorable cardiac autonomic profiles (van Doornen et al., 2009), or functioning of the HPA-axis and levels of cortisol (Langelaan et al., 2006) have been found.

It can be concluded that measures of work-related stress perceptions are negatively related to leaders' mental (SIC = -1, k = 8) and physical health (SIC = -0.69, k =13). Further, it is interesting to note that impairments in mental health through enhanced burnout or reduced work engagement are differentially related to presenteeism and absenteeism, even though research could not confirm any relationships with physiological health indicators.

2.3.4.12 Interventions

In the following and final paragraph of our results section, we discuss (health) interventions targeted specifically at leaders, and their outcomes. The interventions presented here differ greatly in their theoretical foundation and practical implementation. Some of them are very specific to a certain work environment (e.g. hospital), whereas others have a broader applicability. We divide into interventions that focus specifically on leaders' health, and interventions that target leaders' health via an increase in competence.

Examining the effects of a web-based training on several attitudinal and physiological health outcomes, the training proved effective in influencing attitudes and self-efficacy regarding a healthy diet and in reducing leaders' distress. Female participants reduced their body weight during the training. However other bio-physiological indicators were not affected (Bennett, Broome, Schwab-Pilley, & Gilmore, 2011). Further, an intervention featuring progressive muscle relaxation showed to decrease leaders' reports of burnout (Janet & Velayudhan, 2014). A biofeedback intervention showed some positive results. While both the intervention, as well as the control group (stress diary) had reduced heart rate, lower levels of anxiety, and better health related quality of life, physiological indicators (vegal control, decreased sympathetic arousal), emotional interferences improved in the bio-

feedback condition only (Munafò, Patron, & Palomba, 2016). On a somewhat related note, yoga interventions have been shown to increase leaders' brain wave coherence (Ganpat, Nagendra, & Muralidhar, 2011) and decrease burnout (Adhia, Nagendra, & Mahadevan, 2010). A leadership training focusing on spiritual aspects and values has also been related to reduced burnout (Yong, Kim, Park, Seo, & Swinton, 2011). Finally, a mindfulness training showed to significantly decrease leaders' stress levels four and eight weeks post-intervention (Wasylkiw, Holton, Azar, & Cook, 2015).

Other interventions have not targeted leaders' health as directly. Rather, they aimed to increase leaders' competence, efficacy, or coping skills, which in turn resulted in better health. For example, leaders who participated in a stress management intervention for supervisors reported less gastrointestinal and related stress symptoms after nine months (Beaton, Johnson, Infield, Ollis, & Bond, 2001). A leadership coaching enhanced leaders' goal attainment and their mental well-being. In comparison with a control group, coachees reported higher workplace well-being, less depression, and less stress (Grant, Curtayne, & Burton, 2009). Another training targeting leaders' team management skills has shown to enhance leaders' well-being via their challenge experience at work. As challenge increased, so did leaders' health. This relationship was moderated by the teams' openness to change (Nielsen & Daniels, 2012). A very context-specific development initiative, a healing touch training (i.e. hands-on healing) for nurse managers, also showed to enhance participants' health. The healing touch training as a means to relieve patients' symptoms proved also to decrease nurse managers' work stress, depression, anxiety and enhance sleep quality, overall vitality, relaxation, and heart rate variability. Leaders' job satisfaction, feelings of hurriedness, and pain symptoms were not impacted by the training (Tang, Tegeler, Larrimore, Cowgill, & Kemper, 2010). A leadership development intervention which targeted several leadership behaviors did not have an impact on overall burnout pre- and post-intervention (H. Lee et al., 2010). However, the authors found that some of the relationships between specific leadership behaviors such as the ability to manage the workload and enabling others

to act, and different facets of burnout (emotional exhaustion, professional efficacy, and cynicism) changed after the intervention.

Overall, the different interventions presented here had a positive effect on leaders' mental (SIC = 0.91, k = 11) and physical (SIC = 0.83, k = 6) health. It is interesting to note that interventions targeted at health management, as well as interventions targeted at competency development had a health impact. One should consider however, that particularly with intervention studies, publication bias is high and can thus distort results.

2.3.5 Discussion

In this systematic review, we identified predictors for the health of organizational leaders. We examined and organized empirical evidence from 184 articles published between 1986 and 2016. In presenting our findings, we drew heavily on the model of managerial stress (C. L. Cooper et al., 1988) which clusters the demands leaders are faced with into six categories: factors intrinsic to the job, the managerial role, interpersonal relationships, career and achievement, organizational structure and climate, and the home / work interface. Further, individual characteristics as well as job satisfaction have an impact on leaders' mental and physical well-being. Overall, the available evidence lends support to the model devised by C. L. Cooper and colleagues. However for future research, we emphasize the need to tailor predictors even more to the specific demands of the leadership role. Further, taking the quality and quantity of evidence into account, it quickly becomes apparent that further studies with more rigorous design criteria are needed, in order to infer causal relationships between predictors and outcomes.

Next to more general job demands that relate to leaders' health, such as factors intrinsic to the job or the work-home interface, we uncovered several predictors which apply specifically and exclusively to the leader role. Particularly the category *managerial role* and *interpersonal relationships* contain several leader-specific health predictors. This proves the importance of examining health outcomes for leaders as a particular sub-sample of employees. The most important contribution of this article lies in the system-

atic examination and presentation of research results on leaders' health. As the interest in this topic is increasing, and calls for more research on leaders' health are voiced (Barling & Cloutier, 2017), it is crucial to organize findings in order to build future research on a solid empirical foundation. Before discussing strengths and limitations of this review, and outlining implications for future research, we briefly summarize our findings in the different predictor categories.

2.3.5.1 Overview and evaluation of findings.

Overall, this review includes more findings on leaders' mental than their physical health (see Figure 6 and Figure 7 for an overview). The most researched predictor category regarding leaders' mental health is interpersonal relationships. However, the evidence is very heterogeneous, which makes the interpretation difficult. In part this is owed to the fact that very different interpersonal aspects (e.g. relationship quality, leadership style, followers) are included in this category. While the more established constructs such as relationship quality, conflict, and social support point to a relatively clear conclusion, other, more novel constructs in this context (e.g. leadership style, follower characteristics) offer contradicting results. Looking at Figure 6, it appears that results regarding stress, job satisfaction, and the home-work interface converge the most in predicting leaders' mental health. One should note however, that particularly the first two categories include comparably few studies (stress: 8, job satisfaction: 6), which makes convergence more likely.

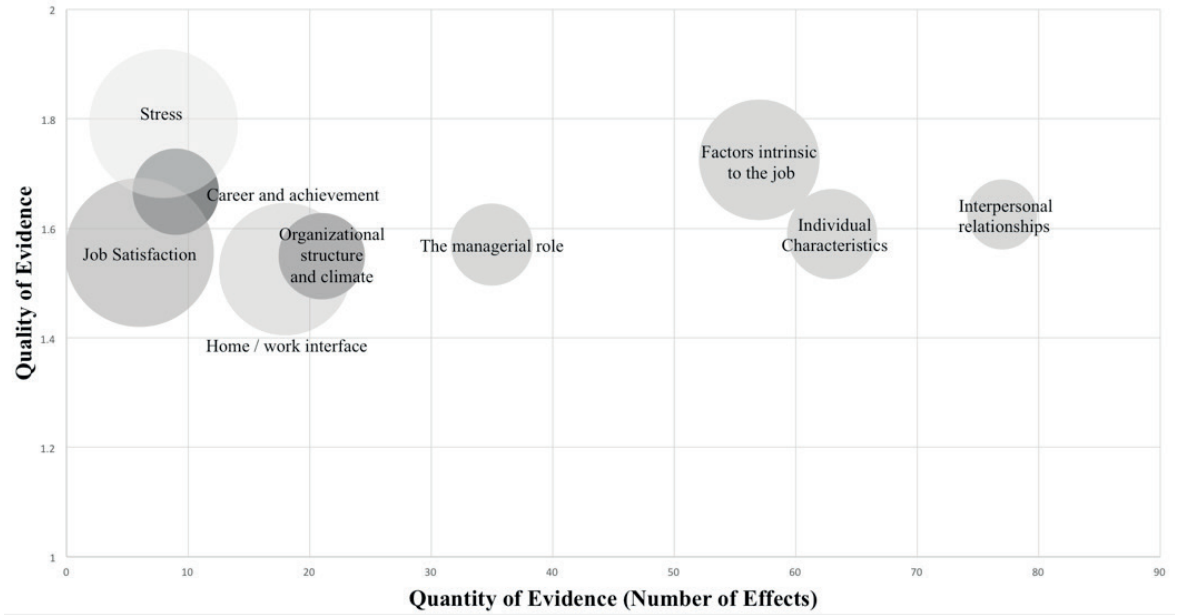

Figure 6. Overview of the relative contribution of categories predicting leaders' mental health.

Note. Bubble size represents SIC values – the bigger the bubble, the higher the convergence of the evidence. Quality of evidence is based on the average quality ratings, quantity of evidence refers to the number of effects included in this review.

Looking at leaders' physiological health, individual differences are the most researched topic. This could be due to the fact that this category includes personality as well as demographic (e.g. age) and physiological factors (e.g. body weight). The latter are closely related to physical health, and can even be considered inherent health indicators. This is reflected by a high convergence of findings, indicated by the large bubble size in Figure 5.

Comparing findings on mental and physiological health, it is interesting to note that the physiological studies seem to have a higher quality. This can in part be attributed to our quality-rating procedure (see Table 1). Particularly with regard to the methods criteria, physiological studies have the advantage that they usually include at least two independent measurements (e.g. questionnaire and physiological data), often measured at different points in time.

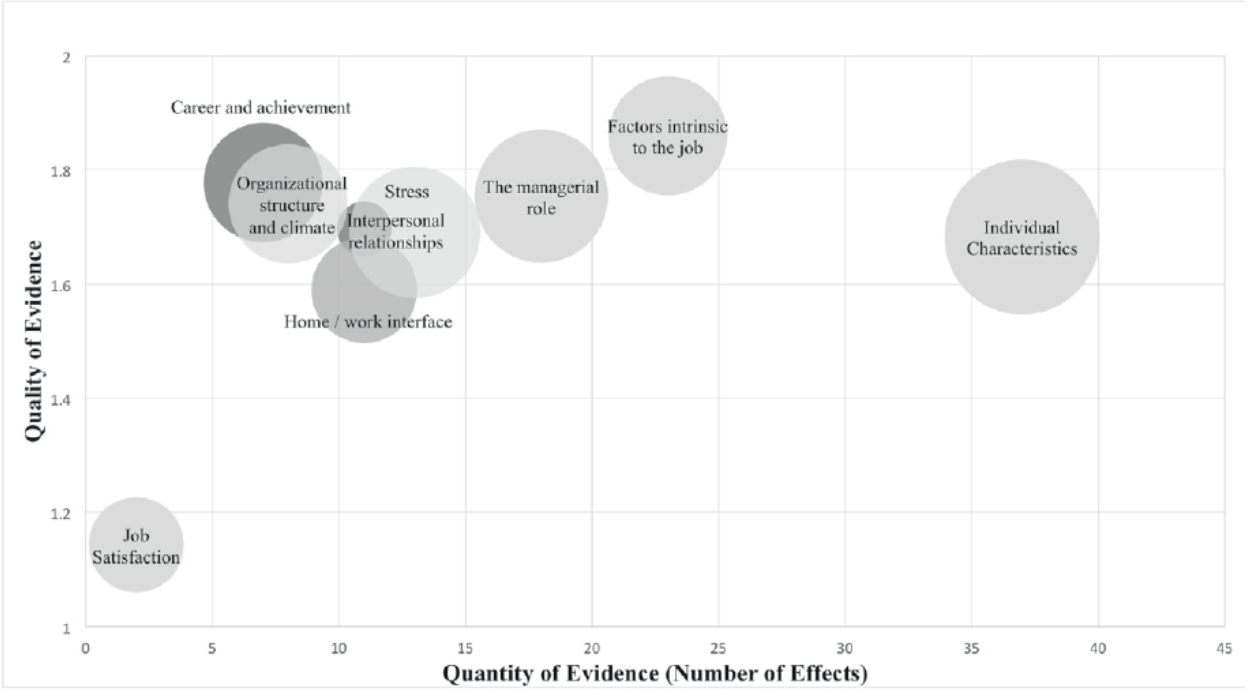

Figure 7. Overview of the relative contribution of categories predicting leaders' physical health.

Note. Bubble size represents SIC values — the bigger the bubble, the higher the convergence of the evidence.

Quality of evidence is based on the average quality ratings, quantity of evidence refers to the number of effects included in this review.

Reviewing the available evidence, we found that several predictors of leaders' health overlap with general work related health predictors that could potentially apply to any employee (with or without leadership responsibilities). For example, factors intrinsic to the job, particularly overall work demands, a high workload, and effort-reward imbalance were negatively related to leaders' mental health across several studies. Even though investigated considerably less often, workload and effort reward imbalance were also negatively related to leaders' physical health.

Further, the job strain model (Karasek, 1979) received strong support in a leadership context and was related to mental as well as physical health outcomes in all studies included in this review. This supports the notion, that a combination of high demands with low decision latitude should be avoided. In a leadership context this might be of particular importance. Middle managers for example are faced with high responsibility for their teams and organizational targets, while at the same time having to adhere to organizational boundaries as well as top management decisions. We found the lack of research relating leaders' accountability and their health interesting to note. Even if we subsume the findings regarding leaders' responsibility for others (see managerial tasks) under this category, the available evidence is not substantial. This is noteworthy, as enhanced accountability (for people and things) is a central characteristic of the leadership role and should thus receive more attention in the future. Similarly, monotony, or the opposite – dynamic tasks and fragmentation of tasks have received little research attention despite being a key characteristic of the leadership role (Mohr & Wolfram, 2010).

We found further that in the few available studies on the subject, (monetary) rewards were positively related to leaders' mental health. Other job-related factors (e.g. task complexity, meaning of work) should be considered as covariates in this relationship (Somech & Miassy-Maljak, 2003) when interpreting this finding. High paid jobs are usually more complex and

thus provide incumbents with (psychological) resources such as task variety and meaning of work. Evidence relating rewards and benefits to leaders' physiological health is missing. Country specific differences might play a role in this context and could be the focus of future research. Free healthcare access and healthcare costs differ by country, and thus make individual monetary benefits more or less important for health maintenance. Independent of (monetary) rewards, all seven articles reviewed here uncovered negative relationships between leaders' effort-rewards imbalance and their mental or physical health, emphasizing the relevance of this construct in a leadership context.

Factors related to leaders' career and achievement emerged as another general health predictor. While several studies indicated that a perceived or actual threat of job loss may be detrimental to leaders' mental and physical health, surprisingly, we could not find evidence showing that development opportunities are a health resource for leaders. This might be due to the fact that only few studies examined this topic. Further, development opportunities may be more strongly related to career success or job satisfaction than to health outcomes.

As any other employee, leaders are bound to the structure, the processes, and the climate of their respective organization. As representatives of organizational policies this may be even more so for leaders than for employees without leadership responsibilities. The notion that leaders' health is related to organizational factors was confirmed by several of the reviewed articles in different respects. First, we found some evidence that organizational size and complexity are positively related to leaders' mental health. This might be due to the fact, that a larger organization can offer more (security) buffer to its employees than a small or medium sized business (e.g. more colleagues to act as potential replacements during sick leave, protection through works council). Further, the sector within which an organization operates appears to be related to leaders' mental and physical health. While articles showed that leaders' in private organizations were more stressed than their peers in the public sector, leaders in public organizations reported worse physical health.

Managing the home-work interface is another potential health risk for leaders according to the findings examined in this review. Findings indicated that both family-to work, as well as work-to family conflict negatively impact leaders' mental and physical health. On the one hand, this predictor category might be interpreted as a general rather than a leader-specific predictor, as employees without leadership responsibilities face similar problems. On the other hand, it may be speculated whether the management of the home-work interface presents a particular challenge to employees with leadership responsibilities. The high amount of responsibility for team members as well as performance might make it more difficult for managerial employees to detach from work, causing rumination and unfavorable (mental) health outcomes. Further, leaders' enhanced workload leaves them less time to spend on non-work activities.

A large amount of research has examined leaders' individual characteristics as predictors of their mental and physical health. The two most anonymous findings in this review point towards a positive relationship between leaders' positive self-concept and internal control orientation with their mental and physical health. Results regarding type A behavior patterns and other personality dimensions (e.g. need for power, hardiness) are more mixed. This might be due to differences in the conceptualization and operationalization of these personality traits. Further, the constructs examined should be tied more closely to the demands of a leadership role. Personality traits relating to interpersonal performance (e.g. social self-efficacy, emotional intelligence, narcissism) could be a promising avenue for future research as they impact leaders' ability to deal with this key work characteristic. The amount of research on personality and leaders' health shows, that the interest in leaders' personality (Judge, Bono, Ilies, & Gerhardt, 2002) is unabated and extends beyond leadership effectiveness.

Job satisfaction, as a positive work-related attitude could be and has been considered a (mental) health indicator for leaders (C. L. Cooper et al., 1988). In this review, we treat job satisfaction as a predictor, as it has been examined as such in several studies. While the amount of research on job satisfaction and leaders' health is limited, the findings reviewed here indicate

that a positive attitude towards their job, i.e. job satisfaction, relates positively to leaders' mental health. This is not surprising considering potential conceptual overlap between job satisfaction and work-related mental health indicators such as work engagement. The need for more rigorous designs, e.g. longitudinal and multisource studies becomes particularly apparent with regard to this predictor category and might lead to more differentiated insights in the future.

Finally, the last general health predictor in this review is leaders' stress experience. Stress, resulting from a threat appraisal of a certain situation, demand, or job-aspect and the inability to cope with this threat (Lazarus, 1999), has been negatively related to leaders' mental and physical health across several studies. This indicates that the additional cognitive layer that researchers insert when examining the *perception* of a certain work aspect as stressful might be important. It is crucial for future research to differentiate more clearly between stress (i.e. perceptions) and causes of stress (i.e. stressors) in examining health-related outcomes.

Looking at all predictor categories, only the managerial role and interpersonal relationships, turn out to be leadership-specific. In our view, these two categories are also the most interesting, i.e. heterogeneous, in terms of findings and offer promising ideas for future research.

Looking at the managerial role, particularly with regard to mental well-being, almost as many positive as negative relationships have been found. This underlines the duality of leadership, which comes with additional demands (e.g. higher workload, accountability), *and* additional resources (e.g. meaning of work, task variety, autonomy). Future research should take a closer look at the role of these opposing poles in influencing leaders' health. In terms of physical well-being, the evidence relates the occupation of a managerial role to several negative physiological health indicators, commonly associated with stress (e.g. elevated blood pressure, heart rate, cortisol levels). While this evidence is by no means unanimous, it does indicate that leadership can be associated with a physiological stress response. Leaders should thus take particular care and engage in suitable preventive health measures.

A second, maybe less obvious predictor category that is very specific to the leadership role, is the category interpersonal relationships. The majority of results in this review indicate that positive relationships, as well as social support can constitute a mental resource (i.e. are positively related to leaders' mental health). The evidence in terms of physiological health is more mixed and less extensive. More studies are needed applying bio-physiological measurements rather than self-reports to examine this relationship.

Besides examining effects of the nature of relationships at work on leaders' health, future research should focus more on interpersonal factors that contribute to the relationship quality. Some approaches in this direction have been made (e.g. via the investigation of leadership style), however thus far have produced very heterogeneous results. We strongly support the idea of examining leaders' style in relation to their health. Prospectively the quality of the leader-follower relationship should be considered as a mediating factor here. The evidence on leadership style and health is somewhat hard to interpret as the theoretical assumptions underlying this research differ greatly. Further the variety of leadership styles and behaviors under investigation, make it hard to compare the outcomes. The notion that certain aspects of leadership behavior exhaust leaders' (mental) resources and thus lead to adverse health outcomes over time receives limited support. In our view, this predictor category is of particular importance and should receive more attention in future research, as interpersonal interactions lie at the heart of leadership. Social exchange, interaction, and leadership style (e.g. meetings, dialogs, presentations) constitute a major part of being a leader and in most instances differentiate leader and follower roles.

In sum we find that the majority of health predictors in this review are of a general, rather than leader-specific nature. This demonstrates that, even though the interest in leaders' health is great, and a surprisingly large amount on the topic already exists today, there is still a lack of theory revolving around specific aspects of leaders' jobs that might influence their mental and physical health. While the body of research on general health predictors is valuable, there is a clear need for future research to focus more closely on the particular demands and resources of leadership. Naturally, the knowl-

edge we have gathered so far, e.g. the applicability of the demand-control model to leaders' health, can and should be used to examine more specific predictors and devise a theoretical model on leaders' health based on empirical findings. Before discussing implications for future research in more detail, we take a closer look at the strengths and limitations of this review.

2.3.5.2 Strengths and limitations.

To our knowledge this review is the first to present a structured overview of the diverse literature concerning predictors of mental and physical health for employees in leadership roles. By considering both positive and negative indicators of mental and physical health, we integrate existing findings in current organizational theory (Bakker & Demerouti, 2014), and extent existing models (C. L. Cooper et al., 1988) on managerial stress. More specifically, we broaden the conception of leader health from a narrow focus on ill-health by including positive factors such as work-engagement and healthy work attendance.

In terms of methodology, one strength of our review is the high number of search terms that were entered in two search engines with access to multiple and diverse (social) science databases. This ensured that a diverse literature could be reviewed. Further, by systematically rating the methodological quality of the articles and by calculating a SIC, we add a somewhat quantitative dimension to our qualitative results, and facilitate interpretability. Finally, the high number of studies (184) included in this review can be considered a strength. This reflects the diversity of research on leadership and health and allows the reader to form a holistic overview of relevant findings. The fact that we did not include unpublished or *grey* literature in our review, guarantees a high level of quality of the individual contributions. This could also be considered a weakness however, as publication bias might be of concern here.

Other limitations of this review need to be addressed clearly. From a methodological perspective we would like to emphasize that even though we applied many search terms, they are by no means exhaustive. Further, as several articles examine relationships between work and health using a

leader sample, but without any particular focus on the leadership role (i.e. the sample is not mentioned in the title or abstract), it is likely that some of those articles have been overlooked in our search. We decided to exclude qualitative data and case studies from our review to facilitate the interpretation and comparison of results. This type of evidence could nevertheless contain valuable information.

The first author conducted the article selection as well as the extraction of the relevant data. It would have been preferable to include several independent raters in this process. This concern is somewhat mitigated by the fact that the quality assessment was conducted by both the first and the second author resulting in high convergence of ratings.

Although we made an effort to create a holistic review, we cannot guarantee that all relationships, especially null relationships, contained in the 184 articles presented in this review have been considered (e.g. in the calculation of the SIC). It is likely that for example relationships between outcomes and control variables or relationships that are not specifically mentioned in the results section of a paper have been overlooked.

Although all studies included in this review, examined leaders (i.e. employees with formal leadership responsibilities), the actual roles and tasks of these individuals are quite divers (e.g. managers, school principals, construction project managers, correctional supervisors). This somewhat impacts the comparability of results, however, at the same time might be beneficial to the generalizability of findings.

Further, the SIC should be interpreted with care, particularly in cases where the number of studies included in the calculation is low. We would like to emphasize that the SIC does not present an effect-size, but rather indicates the convergence of available evidence (Wielenga-Meijer et al., 2010).

2.3.5.3 Implications and future research.

Our article offers both theoretical and practical implications. From a theoretical perspective, this review is a first step towards a leader-specific

model of health. While we used the model on managerial stress (C. L. Cooper et al., 1988) and many findings confirmed its' assumptions, it quickly becomes apparent that this framework is not specific enough to account for the particular demands of leadership. Intrinsic job factors such as workload or the management of the home-work interface can be equally applied to employees without leadership responsibilities. Here lies the biggest challenge for future research in our eyes. We believe it is necessary to examine the leadership role and leadership tasks more closely in order to understand the unique challenges of leadership and their implications for leaders' health.

One such specific aspect of leadership is the interpersonal domain. While included in the original model by C.L. Cooper and colleagues (C. L. Cooper et al., 1988), we believe this dimension needs to be extended and emphasized more in future research. Particularly, leaders' interpersonal (i.e. leadership) style should be investigated more thoroughly in relation with their health. By examining how using a certain style affects leaders' health, and studying underlying mechanisms and moderating factors, we would get a better idea of the mental and physical cost of high quality leadership behavior (Barling & Cloutier, 2017). In order to so successfully, it is crucial that more specific models on leadership behavior and health are developed, considering both health- hampering as well as positive, motivational processes. Further, more unanimity is needed with respect to the leadership styles under investigation. For evidence to be comparable, the same constructs, based on theoretical considerations should be investigated.

Another very interesting aspect in this regard is supervisor support, or the leadership style leaders themselves are subjected to in their role as followers. While transformational leadership has proven beneficial to employee health (e.g. Munir, Nielsen, & Gomes Carneiro, 2010; Nielsen, Yarker, Randall, & Munir, 2009), the findings reviewed in a leadership context are less clear. It would be interesting to examine whether employees with leadership responsibilities benefit from a different leadership style or behavior than their followers do. Again, particular needs of employees in leadership positions need to be uncovered to match appropriate superior support.

Finally, in our view, research on the role of followers' in influencing leaders' health is underrepresented to date. As dealing with and managing followers is leaders' main task, follower characteristics in terms of motivation, competency, personality and health should have a great impact on how leaders perceive their work environment and how much effort it takes to successfully lead a team. Thus, future research should take a closer look at leadership as social interaction process to uncover how leaders and followers influence each other.

Another theoretical aspect that should receive more attention is the fact that the majority of research on leaders' health is focused on negative predictors and outcomes. In part this might be owed to the challenge of assessing positive health indicators (e.g. what is physical health beyond healthy work attendance?). However, a closer examination of preventive or motivating factors would be very valuable to enable sustainable organizational health management.

From a practical perspective, our review demonstrates that many unfavorable working conditions that have already been identified for employees without leadership responsibilities, e.g., a combinations of high demands and low control without respective social support, prove to be detrimental to leaders' health as well. Looking at the evidence reviewed regarding the managerial role, it is important to note that occupying a leadership position is not per se associated with higher health risk. On the contrary, certain aspects of being a leader appear to cause higher engagement and lower reports of mental ill-health (e.g. emotional exhaustion). Particularly a sense of control seems to be important in this regard. This is further stressed by findings on individual differences that identified an internal control orientation as beneficial for leaders' health. In order to foster leaders' health, organizational health management should target leaders' objective and perceived control (e.g. by allowing high autonomy), particularly if they are looking for preventive measures to create an environment in which leaders thrive.

An additional research need is the investigation of process and causal effect models, taking a closer look at mediating and moderating factors.

Taking a more process oriented perspective on leadership and health could help us to differentiate more clearly between stressors, stress, and strain and thus enhance our understanding of the relationship between leadership and health.

Overall, we believe that future research on leaders' health will be both rewarding and theoretically and practically important. While from a theoretical perspective many advancements have been made in connecting leadership with followers' health (Eriksson et al., 2010; Franke et al., 2014; Vincent, 2012), we need to complement these models by adding leader outcomes. Practically, it is important to identify levers for leaders' health, as they drive organizational health and performance.

2.3.5.4 Conclusion.

Looking at the evidence reviewed in this article, the most striking finding is that even though a large amount of research on leadership and health exists, comparatively few articles focus on health predictors or demands specific to the leadership role. This gap needs to be addressed in future theory and research. Our article further demonstrates that having a leadership role does not per se pose a risk factor to ones' health. The rewarding aspects of being a leader appear to buffer negative effects from an enhanced workload and high responsibilities. However this field of tension (i.e. high demands and high rewards) leaders are faced with every day requires more rigorous empirical investigation. The most promising aspect to be examined in this regard is the interpersonal dimension of leadership. The way leaders and their followers influence each other lies at the heart of leadership, and thus can be an important contributor to leaders' ill- or well-being.

3. Overall Discussion

This dissertation examined the mutual influence leaders and followers exert on each others' well-being, thus addressing the question whether leaders and followers constitute a work related demand or resource (Bakker & Demerouti, 2014) for each other. Or, to seize on the literary introduction, this work tested whether there is some truth to the claim *hell is other people* (Sartre, 1957) or whether others are rather a source of happiness (Whippman, 2016). Referring to trait (e.g. Judge et al., 2002) and relation theories (e.g. Graen & Uhl-Bien, 1995) of leadership, both individual differences as well as *mutual* influence processes between leaders and followers are a key element of this dissertation. The consideration of both leader and follower perspectives in terms of predictors and outcomes makes this work unique.

Overall, three main research topics have been addressed, namely: the relationship between leaders' and followers' individual differences and *followers'* work-related well-being, the relationship between leaders' and followers' characteristics and *leaders'* work-related well-being, and finally, the identification of predictors of leaders' work-related well-being and health.

Two empirical studies demonstrated that both leaders' and followers' characteristics, as well as the interaction of the two, have an impact on employees' work-related well-being, i.e. their emotional exhaustion and work engagement. These findings are discussed in more detail below. Further, a qualitative literature review identifying predictors of leaders' health, complements these findings. The review encourages the examination of leader-specific health predictors more generally, and interpersonal health predictors more specifically.

3.1 Summary and Discussion of Key Findings

As described in the introduction, the basic underlying assumption of this dissertation is that the interaction of leaders and followers at work has an impact on employees' mental wellbeing. In reference to JD-R theory (Bakker

& Demerouti, 2014), the foci outcome variables examined throughout this work were emotional exhaustion and work engagement.

I adopted an individual differences perspective in examining leader – follower interactions and their mutually exerted influence. Individual differences, which contribute significantly to the development and maintenance of interpersonal relationships that have been examined in this dissertation, are grandiose narcissism (Ames, Rose, & Anderson, 2006), vulnerable narcissism (Hendin & Cheek, 1997; Wink, 1991) and emotional self-efficacy (Loeb et al., 2016). Applying these traits to the specific context, i.e. leader – follower constellations, led to the examination of specific trait – role combinations; e.g., testing vulnerable narcissism in followers in interaction with grandiose narcissism in leaders. Further, next to the combination of leader – follower traits, I examined whether follower characteristics in the form of psychological well-being, i.e. emotional exhaustion and work engagement, impacted leaders' work-related well-being.

Overall, the results of the two empirical studies support the notion that leaders' and followers' traits and characteristics interact to impact employees' psychological well-being. More specifically, the study *When grandiose meets vulnerable* confirmed the expected intra-individual effects of followers' vulnerable narcissism on their emotional exhaustion and work engagement. Followers with high levels of vulnerable narcissism reported reduced work engagement and enhanced emotional exhaustion. Interestingly, leaders' grandiose narcissism moderated the negative relationship between followers' vulnerable narcissism and their work engagement. The moderating effect of leaders' grandiose narcissism on followers' emotional exhaustion could not be confirmed.

Additional analyses furthermore revealed that the intra-individual effects (i.e. a positive relationship between vulnerable narcissism and emotional exhaustion, and a negative relationship between vulnerable narcissism and work engagement) held true for leaders as well. Looking at the effect of followers' personality on leaders' well-being, followers' grandiose narcissism was directly positively related to leaders' emotional exhaustion.

These results demonstrate that narcissism in its different facets (Wink, 1991) is an important factor in determining employees' well-being at work. Next to the intra-individual effects, the interaction effects between leaders' and followers' personalities are particularly interesting. It appears that leaders' grandiose narcissism can hamper employees' motivational process (Bakker & Demerouti, 2014) resulting in lower levels of work engagement. Followers' grandiose narcissism on the other hand, while unrelated to leaders' work engagement, appears to foster leaders' emotional exhaustion. The fact that different outcome variables are affected by employees' personalities (i.e. work engagement for followers and emotional exhaustion for leaders) suggests that different underlying processes are at work here. According to JD-R theory, resources are more strongly related to work engagement, and demands more strongly to emotional exhaustion (Bakker & Demerouti, 2014). Therefore, the lack of support and positive encouragement that a vulnerable narcissistic follower experiences under a grandiose narcissistic leader could potentially be understood as a lack of resources. Grandiose narcissistic followers on the other hand, might be particularly challenging to deal with for leaders, and thus could be classified as a work demand. It has to be noted that these results should be interpreted with care, as the path of influence from followers to leaders was only examined in explorative analyses in this first study. The second study contained in this dissertation addressed this route of influence more explicitly.

The longitudinal study entitled *What about the leader?* demonstrated, that characteristics of team members have a relevant impact on leaders' work-related psychological well-being. While team members' work engagement was directly positively related to leaders' work engagement over time, team members' emotional exhaustion did not directly affect leaders' emotional exhaustion. Team members' emotional exhaustion in interaction with leaders' emotional self-efficacy, did however result in enhanced emotional exhaustion in the leader. In this study no reverse effects, i.e. effects from leaders' emotional exhaustion or work engagement on followers' well-being were found.

Similarly to the first study, these results show that followers' characteristics can constitute a demand or resource for their leaders. Further, the relevance of emotional self-efficacy as a moderator, and important influencing factor for leaders, is highlighted. Again, it becomes apparent that individual differences play an important role for employees' work-related well-being on the intra- and the inter-individual level. Specifically, emotional self-efficacy, the belief in ones ability to comprehend, impact, and regulate own and others' emotions (Loeb et al., 2016; Mayer et al., 2003) was shown to impact the crossover of emotional exhaustion from followers to leaders.

This could be an indication that a disposition, which is expected to have positive implications, particularly for a leader, whose main concern is the management of others, can become a risk factor to psychological health. This realization led to a broader research question: What are factors that impact the health of leaders, who are faced with certain idiosyncratic challenges at work, e.g. emotional labor in dealing with followers (Humphrey, Pollack, & Hawver, 2008)?

This question was addressed in the qualitative literature review in chapter 2.3. The review stands out from the empirical investigations in several aspects. First, the methodology is obviously different. This is owed to the topic under investigation. While the first two studies examined a direct influence from leaders to followers and vice versa, the review addressed a much broader research topic that warrants a different approach. As the first two studies explored and indicated possible influence mechanisms from followers to leaders, the question arose which other factors would have an impact on leaders' psychological well-being and health.

While a surprisingly large amount of research on this topic exists, the theoretical background is mostly missing. Therefore the systematic search and evaluation of available evidence was necessary to gain a comprehensive overview of the current state of research. The results form the basis for the growing body of literature that examines leaders' health and well-being (Barling & Cloutier, 2017). In the context of this dissertation, the literature review adds to the findings on a mutual influence between followers and

leaders, in the sense that leader – follower relations as well as follower characteristics were identified as predictors of leaders' health.

Overall, this dissertation demonstrates, that interactions of leaders' and followers' traits and characteristics are related to their emotional exhaustion and work engagement. It is crucial to take a differentiated look at the individual results to derive a sound conclusion. This includes a critical reflection of the strengths and weaknesses of this work.

3.2 Limitations and Avenues for Future Research

Looking at the results described above, one aspect that requires further discussion, is the choice of individual differences and characteristics that have been examined in relation to employee well-being. Both narcissism and emotional self-efficacy were chosen due to their relevance in terms of emotional processing and control. While narcissism is characterized by a lack of empathy and limited emotional control (e.g. Raskin, Novacek, & Hogan, 1991; Wai & Tiliopoulos, 2012), individuals scoring high on measures of emotional self-efficacy believe in their ability to adequately identify and manage their own and others' emotions (Loeb et al., 2016). As the core topic of this dissertation was the impact of interactions between leaders and followers on work-related well-being, those traits seemed most suitable.

Further, both traits have been examined in relation to leadership, and represent bright-side dark-side phenomena to a certain extend. Even though grandiose narcissism can have some positive effects in a leadership context (Watts et al., 2013), it has several negative implications, particularly regarding the interpersonal domain (Judge et al., 2006). Vulnerable narcissism is mainly relevant for the individual, and has negative implications on psychological health (Sandage, Jankowski, Bissonette, & Paine, 2017; Schwarzkopf et al., 2016) and work-related well-being (see chapter 2.1). Narcissism could thus be considered a dark trait in the context of leadership. Emotional self-efficacy on the other hand has many positive implications and has been considered a work-related resource (Loeb et al., 2016), thus representing a bright trait. By

including both traits in my research, this dissertation connects to current advances in the leadership literature, examining narrow traits in the context of work-related behavior and well-being (e.g. Batinic, Appel, & Gnambs, 2016).

The main limitation regarding the examination of narcissism and emotional self-efficacy in this dissertation is that they have been examined in two isolated studies only. This does not allow for a direct comparison of the impact those traits have in interaction. Such a comparison would be interesting in several respects. First, as they represent two somewhat antithetical aspects of emotion-regulation and control, as well as interpersonal interaction, it would be interesting to examine if they have the expected differential effects (i.e. narcissism negative and emotional self-efficacy positive) on interpersonal interaction and employee well-being when examined together. Second, both traits are not mutually exclusive. Narcissism has been positively related to the ability to regulate others' emotions (Austin, Saklofske, Smith, & Tohver, 2014) and successful CEOs have been shown to possess narcissistic characteristics, as well as emotional intelligence (Harrison & Clough, 2006).

Narcissism appears to be negatively related to affective but not cognitive empathy (Wai & Tiliopoulos, 2012). This differentiation between the cognitive understanding of others' emotions and intentions, i.e. theory of mind (Premack & Woodruff, 1978; Wellman, Cross, & Watson, 2001), and the empathic reaction to others' emotions affecting the own emotional state, i.e. empathy (Davis, 1994), has been related to brain activation in different areas (Kanske, Böckler, & Singer, 2016; Nummenmaa, Hirvonen, Parkkola, & Hietanen, 2008), thus indicating two independent processes. This is further supported by findings demonstrating differential effects of specific training methods on brain plasticity (Valk et al., 2017). This distinction could be crucial in the examination of narcissists' impact on others' emotions. For example, in the leader-follower context it would be interesting to test, whether grandiose narcissistic leaders are better able than their less-narcissistic peers to manage followers' emotions in times of crisis (Nevicka, De Hoogh, Van Vianen, & Ten Velden, 2013; Watts et al., 2013). Their lack of affective empathy could be helpful in this case to detach from the threatening situation, while their cognitive understanding of followers' emotions and fears (theory

of mind) could support them in making a positive impact, e.g. reassuring their followers. Examining both narcissism and emotional self-efficacy in combination, researchers should consider however, that grandiose narcissists tend to overestimate their performance in various domains (e.g. John & Robins, 1994). Therefore the use of an alternative measure for emotion regulation (e.g. situational judgment tests) should be considered.

Further, looking at the use of individual differences in this dissertation it has to be noted that narcissism has been examined as predictor, whereas emotional self-efficacy has been examined as moderator only. While the main assumption of this dissertation is based on the interaction between leaders and followers (and their characteristics), both perspectives, i.e. individual differences as predictors and moderators, are warranted. However, they should have been investigated in equal measure. Therefore, future research should look at the predictive validity of emotional self-efficacy for both leaders' and employees' psychological well-being.

Finally, all measures of individual differences used in this dissertation are short versions of longer inventories. While great care has been taken in selecting these inventories, and the validity of all short measures has been examined and confirmed in prior research, the use of longer instruments (e.g. the NPI 40 instead of the NPI 16) would have been beneficial. This applies particularly, as individual differences were a main focus of this dissertation. The use of longer inventories would have allowed a more differentiated examination of sub-dimensions of single constructs. For example in the case of grandiose narcissism it might be speculated whether the sub-dimension of exploitiveness-entitlement (Ames et al., 2006) has stronger interpersonal implications than the sub-dimension of self-absorption/self- admiration. The fact that the majority of research in narcissism has focused on overall scores (Ames et al., 2006) somewhat mitigates this concern.

Another limiting aspect of this dissertation that needs to be discussed is how the directions of influence, i.e. from leader to follower or from follower to leader, have been examined. Even though both directions have been considered, adding to a more holistic understanding of the leadership processes,

a more systematic approach should be applied in future research. This requires an extensive research design, collecting data from followers and leaders including all research variables, and ideally at least two data collection points to look at the influence of variables over time.

What further needs to be considered more systematically is the level of investigation, i.e. individual, dyad, team. This dissertation includes different levels of analysis. First, individual effects have been considered in multi-level analyses in the study *When grandiose meets vulnerable.* The study *What about the leader?* includes a multilevel design, however was analyzed at the group level using hierarchical regression. This difference is important when it comes to interpreting the data, as team level effects can be different from individual level effects (Croon et al., 2014; Lüdtke et al., 2008).

Another limitation, that could also be considered a strength of this dissertation, are the different methods that have been applied to examine the research questions. While each study was designed to adhere to high methodological standards (e.g. multilevel, longitudinal, and systematic approaches), none of them is flawless. The first study for example, features a multilevel design and analysis, however does not include longitudinal data. While the second study contains multi-level data measured at two points in time, the analyses have been conducted at the group level, thus not fully utilizing the multilevel structure of the data. Finally, with the literature review, a completely different methodological approach has been taken. While the qualitative examination has the advantage that the available evidence is structured and presented in a coherent manner, it does not contribute to current knowledge by adding new evidence or data. On the one hand the heterogeneity in methodological approaches makes it difficult to compare the outcomes of the different studies. On the other hand, the fact that findings point in a similar direction (i.e. the powerful impact of interpersonal relationships on work-related well-being) despite the use of different methods supports the validity of this argument.

Looking at the findings made in the two empirical studies, one has to note that the impact of leader-follower interactions on the outcome vari-

ables emotional exhaustion and work engagement are not homogenous. The first study only confirmed that leaders' personality (i.e. grandiose narcissism) interacts with followers' personality (i.e. vulnerable narcissism) to impact followers' work engagement. No effects for emotional exhaustion were found. The second study demonstrated that followers' work engagement directly impacted the work engagement of their leaders, whereas followers' emotional exhaustion only impacted leaders' emotional exhaustion in interaction with leaders' emotional self-efficacy.

Even though a comparison or integration of these findings may be overly ambitious, considering the previously discussed differences in predictors, design, and levels of analysis, the shared underlying assumption (i.e. the mutual influence between leaders and followers with an impact on their work-related well-being) leads me to attempt this nevertheless. I would like to emphasize however, that these interpretations should be considered with some reservations. More research is necessary to validate those claims.

I believe that the difference in effects might hint at different processes that apply regarding health-impairment and motivation, as described in JD-R theory (Bakker & Demerouti, 2014). First, it appears that the motivational process, i.e. the impact of leader-follower interactions on their work engagement, is affected more readily than the health-impairment process. This could be due to context under investigation. The act of motivating individuals to engage in their work in order to achieve shared organizational goals, is a key aspect of leadership. Therefore, if this process is hindered by factors impacting the interpersonal interaction, e.g. grandiose narcissism, reduced work engagement is not a surprising result. Further, looking at the positive case of followers' work engagement enhancing leaders' work engagement over time, as discussed in chapter 2.2, many factors explain an easier transfer of engagement as compared to emotional exhaustion. For example, followers likely express work engagement more readily towards their leaders to make a positive impression (Wayne & Green, 1993), and leaders who perceive their team as engaged experience a validation of their leadership qualities, and worry less about the team's performance.

Employees' emotional exhaustion seems to be less easily affected by leader-follower interactions. Looking at the influence of leaders' grandiose narcissism, it might be speculated whether the examination of actual behavior such as abusive supervision would have been more fruitful (Schyns & Schilling, 2013; Tepper, 2000). Even though grandiose narcissism has consequences for interpersonal interaction, that does not mean they consistently apply in a leadership context. Particularly the fact that narcissistic leaders strive for self-enhancement, and thus are interested in the advancement of their careers (Grijalva, Harms, Newman, Gaddis, & Fraley, 2015) together with an ability to cognitively understand followers' intents and desires (Premack & Woodruff, 1978; Wai & Tiliopoulos, 2012), as well as the ability to impact their emotions (Austin et al., 2014), might mitigate negative interpersonal effects. I believe the interplay between narcissism, emotional or empathic abilities, and effects on interpersonal relations in a work context form a very interesting topic for future research.

A final but very important aspect that needs to be discussed here is the approach taken in this dissertation to examine leader-follower interactions. The interactions examined here do not include observable exchanges between leaders and followers, such as verbal interactions or behaviors. Rather, by taking the trait perspective, a more basic approach was chosen. Characteristics associated with certain behaviors relevant to interpersonal interaction were examined in relation to employees' well-being. This has the advantage that the findings made in this dissertation reflect the general nature of human interaction in a leadership context, independent of situational specifics. However, this trait approach does not consider that individuals, even though prone to certain behavioral tendencies, are able to adapt their behavior according to the situation – particularly at work. Further, this makes the practical implications of this dissertation less tangible, as the results do not allow a derivation of concrete interventions or recommended behaviors in certain situations.

Overall, this dissertation is a first step of examining the impact leaders and followers exert on each other's well-being. The results presented here demonstrate that the integration of the trait and relational approaches to

leadership are a promising avenue for future research. Particularly, traits that are relevant for interpersonal interaction such as narcissism and emotional self-efficacy should be investigated in a systematic manner more extensively. A research design allowing the simultaneous investigation of narcissism and emotional abilities in both followers and leaders would be sensible. Further, to investigate the assumption that leaders and followers constitute a work-related demand or resource for each other, underlying mechanisms of this process should be examined. For example, it might be speculated whether certain trait-role combinations may result in an increase in emotional labor (Humphrey et al., 2008), which in turn affects employee health.

In a next step, relating these traits to concrete behaviors, and potentially situations, could be promising, especially to derive practical implications. Broadly speaking, the examination of mediators to uncover the underlying processes that connect predictor and outcome variables could be fruitful. In the case of narcissism, this could include for example, the role of derogatory communication towards followers, or followers' coping strategies. In terms of emotional self-efficacy, the examination of leaders' ability to regulate their own emotions, or their use of boundary techniques to distance themselves from negative work experiences would be interesting. This way, research could offer concrete indications on how to design leader-follower interactions to set in motion motivational rather than health-impairment processes.

3.3 Contribution to Theory and Practice

Despite the limitations mentioned above, this dissertation makes several important theoretical and practical contributions. From a theoretical perspective, the most important contribution is the insight that leadership is a process commonly created by leaders and followers with multiple paths of influence on employee well-being. This challenges past theoretical models examining leadership as a one-directional process of influence from leaders to followers (e.g. Bass, 1985, 1990). Rather, this dissertation emphasizes the role of followers in the leadership processes and thus contributes to a more integrative literature on leadership (Uhl-Bien et al., 2014).

This dissertation integrates the trait and the relational perspectives on leadership, thus building on and extending past theoretical approaches to leadership theory. While past research has mainly looked at the predictive validity of traits on an intra-personal level (e.g. Grijalva et al., 2015; Judge et al., 2002), this dissertation uncovers the need to look at traits in interaction, and thus focus more on the inter-personal level. This supports a theoretical model of leadership that considers both leaders and followers as active contributors to the process (Day, 2001; Uhl-Bien et al., 2014; van Gils et al., 2010).

Further, the results demonstrating the relevance of certain traits in a leadership context justify and support the trait approach. Even though not examined in a classical sense, i.e. as predictors for leadership emergence or effectiveness, this dissertation shows that (narrow) traits have make an impact on interpersonal relationships and well-being. The contextual fit of certain individual differences is crucial in this regard. In this dissertation, for example, traits related to emotional control and processing were chosen in order to examine effects on interpersonal interaction and well-being. If the overall context of this dissertation had been a different one, e.g. focusing on performance, different individual differences would have been more suitable (e.g. conscientiousness).

When examining the impact of leader-follower interactions on work-related well-being, the necessity to examine traits in interaction rather than in isolation is highlighted. While findings of intra-individual health effects were successfully transferred from the clinical to the organizational setting (i.e. the negative effects of vulnerable narcissism on work-related well-being), the more interesting, and novel, results are the inter-personal ones. The finding that leader and follower characteristics interact to impact emotional exhaustion and work engagement, supports the assumption that leaders and followers can, in reference to JD-R theory (Bakker & Demerouti, 2014) constitute a job-related demand or resource for each other. In this respect, this dissertation integrates theories on leadership and occupational health.

Moreover, by examining different directions and levels of influence, e.g. team effects on the leader, leader effects on individual team members, this dissertation accounts for the complexity of leadership. The different perspectives taken here, extend existing models, particularly when looking of models of health-oriented leadership (e.g. Franke, Felfe, & Pundt, 2014). This dissertation answers current calls in the literature for a stronger leader-focus (Barling & Cloutier, 2017), by examining leaders' health as an outcome variable. Even though past research has considered leaders' health as an important topic, few to none of those articles have examined predictors that apply specifically and exclusively to the challenges leaders are faced with at work (see chapter 2.3). The findings presented in this dissertation constitute a first step towards understanding the complex dynamics of leader-follower interactions and ramifications on leaders' health. Particularly the interpersonal aspects of leadership, specifically interactions with followers, appear to be a main contributing factor in this regard.

Another theoretical contribution of this work is the fact that indicators for employees' well- *and* ill-being, i.e. work engagement and emotional exhaustion have been considered in reference to JD-R theory (Bakker & Demerouti, 2014). This aspect contributes to a holistic understanding of work-related phenomena in the sense that both positive and negative implications are examined. The differences found between effects on the health-impairment and engagement process, i.e. stronger relations between resources and work engagement, as well as demands and emotional exhaustion, further support JD-R theory and the assumption that leaders and followers can constitute a work-related demand or resource for each other.

An important contribution at the crossroads of theory and practice is the integration of leadership theories with occupational health research. This is reflected in the unique combination of variables examined in this work. The investigation of interpersonal aspects, traits, leadership, and health is contemporary as it reflects the demands of today's working environment in a Western society. While early industrial psychologists were focused on performance outcomes and work design for workers during the industrial revolution (Landy, 1997), today's challenges are different. On the one hand,

particularly physical working conditions have improved enormously in Western societies, on the other hand, globalization and technical developments demand high flexibility, availability, and expert knowledge from employees, constituting psychologically challenging conditions and impacting employees' well-being (Ganster & Rosen, 2013). The examination of interpersonal relationships at work, particularly between leaders and followers as stated in the introduction, constitutes one lever to improve employees' work-related (psychological) well-being (Bono & Yoon, 2012; Tepper & Almeda, 2012).

Looking further at the practical implications of this dissertation, the relevance of individual development measures in the area of emotion processing and control as well as perception of the work environment is the most pressing issue on an intra-personal level. As has been demonstrated in chapters 2.1 and 2.2, individual differences, i.e. vulnerable narcissism and emotional self-efficacy, can contribute to reduced well-being at work.

In order to foster employee engagement and reduce emotional exhaustion, individual coaching measures could be applied in the case of vulnerable narcissism. As this construct has not been investigated much in an organizational setting, approaches from clinical or couples therapy (e.g. Snyder, 1994) could be helpful in this regard. Interventions on a smaller scale in could include targeted positive interactions with a supervisor to reassure employees and strengthen their fragile self-concept. Alternatively employees scoring high on vulnerable narcissism might benefit from a mentoring relationship, although it could be particularly challenging for mentors to establish a long-term and trusting exchange (Allen et al., 2009).

Looking at emotional self-efficacy, an important indication that can be derived is that there appears to be a dark side of a generally bright trait. Even though the belief in one's ability to recognize and control emotions has many positive effects, particularly in a work context (Loeb et al., 2016), practitioners should be aware that strong manifestations of this trait could make employees more vulnerable to negative emotions from others. Even though an emotion-focused leadership style may be beneficial to employees, care should be taken to not overly empathize or identify with others' negative

emotions. Interventions focused on strengthening leaders' socio-cognitive rather than their socio-affective skills could be beneficial in this regard (Valk et al., 2017). More research on this topic, particularly with regard to curvilinear relationships, is necessary however, to make clear practical recommendations.

Looking at the inter-personal consequences described in this dissertation, the practical implications are similar. Starting with the negative impact of grandiose leaders on their followers, again coaching could be a potential remedy. First, narcissistic leaders could be coached to utilize the positive aspect of their behavioral tendencies and minimize the related interpersonal difficulties (Kearney, 2010). Second, employees should have a supporting network at their disposal in order to deal with challenging supervisory situations. This could include a nominated trustee or mediator within the organization who supports in case of interpersonal difficulties, or an employee assistance program (Kirk & Brown, 2003).

Further, this dissertation clearly emphasizes the importance of interpersonal relationships, whether positive or negative, between leaders and followers for employee well-being. Thus practitioners should make an effort and provide the necessary resources to allow both leaders and followers to establish positive relationships at work. This could include measures such as leadership, team, or follower seminars and workshops as primary, and mediation, conflict management, or support from a coach as secondary and tertiary interventions.

Due to the focus of this dissertation, i.e. individual differences in an interpersonal context, it is not possible to derive any general recommendations for broad organizational measures. As the individual combination of leader and follower characteristics is crucial to determine individual well-being, practitioners would have to find a matching solution for each individual case, which makes the implementation challenging. What can be recommended however is the adoption of a holistic perspective, considering *both* leaders and followers as drivers of organizational health. This includes the consideration of the specific demands of their respective role. While leaders

and followers share many health-related work demands (e.g. workload, performance pressure), others are unique (e.g. interpersonal aspects of leadership) and require respective differentiated attention.

3.4 Conclusion

The results of this dissertation support the assumption that leaders and followers exert a mutual influence on each other that affects their work-related well-being. More specifically, traits related to emotional control and processing appear to be relevant in shaping leader-follower interactions. The first study demonstrated that vulnerable narcissism has negative intra-individual implications on employees' emotional exhaustion and work engagement. This effect was exacerbated if followers were confronted with a grandiose narcissistic leader, emphasizing the importance of examining traits on an inter-individual level. The second study showed that team levels of emotional exhaustion and work engagement can cross-over to affect leaders' emotional exhaustion and work engagement. While team work engagement was directly related to leaders' work engagement, the crossover of emotional exhaustion was moderated by leaders' emotional self-efficacy. Finally, the results of a systematic literature review emphasized the relevance of interpersonal factors in examining leaders' health.

Overall the claim that leaders and followers can constitute a work related demand or resource for each other could be confirmed. However, more research is needed in order to gain a holistic understanding of the interaction effects and underlying processes involved. Interestingly, effects on work engagement were more pronounced than effects on emotional exhaustion. Therefore, describing other people as hell (Sartre, 1957) may be overly pessimistic. Rather, research should strive to examine how leader-follower interactions should be ideally designed in order to create a motivating, engaging and positive work environment for everyone.

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5. List of Tables

6. Table of Figures

7. Appendix

The appendix contains the following formally required information:

- Publications included in this dissertation

The study described in chapter 2.2 has been published:

Wirtz, N., Rigotti, T., Otto, K., & Loeb, C. (2017). What about the leader? Crossover of emotional exhaustion and work engagement from followers to leaders. *Journal of Occupational Health Psychology*, *22*, 86–97. doi:10.1037/ocp0000024